PRODUCTCATALOG

We supply sound, not equipment.
www.toa.eu

We supply sound, not equipment.

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

TOA group has its headquarter in Kobe and consists of 19 subsidiaries, which are divided into 5 divisions. TOA Electronics Europe GmbH (TEE) is located in Hamburg, Germany, since 1974 and has branches in France, Poland, Benelux, Russia, South Africa, Dubai and Saudi-Arabia. Our Export Sales Team in Hamburg takes care of all other EMEA countries.

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

Furthermore our European warehouse also located in Hamburg, ensures an immediate access to thousands pallets 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 effort.

Dear reader,

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

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

NAVIGATOR

» I help you navigating through the TOA sound variety. «

Yours, Dr. Sound

We supply **sound,** not equipment.

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01 VOICE ALARM SYSTEMS

'The sound of footsteps, whirring baggage carousels, general hustle and bustle – and yet you are still led out of the terminal quickly and safely in an emergency.'

From professional sound reproduction to complex site supervision, TOA voice alarm systems offer built-in versatility and reliability. The various series are extremely flexible, easy to expand and, in addition to their permanent monitoring function, also offer outstanding audio quality.

The only thing nicer is flying!
Yours, Dr. Sound

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»We can rely on TOA – even in challenging projects.«

Allan Andersen, Exit-Sound ApS
Denmark

Thanks to the great support of TOA, which bases on a strong and reliable partnership, we are able to realize even challenging projects successfully, like this one in Aarhus.

In this complex installation the matrix capabilities of the SX-2000 gave us the chance to have the components distributed in different locations but under centralized control. The system's versatility makes it a reliable solution without long lead times and the expense of custom systems.

The Bestseller headquarter in Aarhus consists of six buildings with in total 21,500 m². It was established for about 800 employees and captivates through the mixture of office buildings and outdoor spaces.

EXIT-SOUND
Voice alarm & Evacuation System

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01 VOICE ALARM SYSTEMS /

VX-3000 Series

Combined highly integrated voice alarm and public address system.

The issue of security is more than ever important. Our VX-3000 is a reliable and energy-saving voice alarm system that combines all important functions for PA/VA in one unit frame. The limited number of components makes the design and installation much easier, as well as saving space and reducing cable complexity. This enables rapid system configuration and makes the VX-3000 a cost effective system.

It comes with low loss modular class D amplifiers with 3 different output ratings. These can easily be removed or replaced simply by unplugging them; there is no need for specialist tools. By using low loss modular class D amplifiers and modern power supply switching technology the system becomes much more energy efficient and keeps the operating costs low.

Thanks to its flexible and scalable system architecture the VX-3000 system can be used for both small and large applications, with up to 256 remote microphones and 128 audio sources.

Maximum System Capacity	
Output Power	64,000 W
Speaker Zones	512
Remote Mic connection	256

EN 54 16

Certificate No: 1134-CPR-195

Features

- Compact: All functions, all inputs and outputs in one unit
- Cost effective: Easy system configuration thanks to small number of system components
- Flexible: Broadcast of many different audio signals simultaneously, flexible speaker driving from 1 zone per amplifier up to 64 zones per amplifier
- Scalable: up to 256 remote microphones
- Light-weight: Modern supply switching technology and digital amplifiers

- Energy saving: Standby function for low power consumption during battery backup reduces the required battery capacity
- Decentralized: IP Network based
- Advanced ambient noise control (ANC)
- Master-less system providing high security if one line fails

Applications

- Office buildings
- Airports
- Hotels
- Factories
- Schools
- Hospitals

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VX-3000 Series / Frame / **VX-3004F / VX-3008F / VX-3016F**

EN 54 16
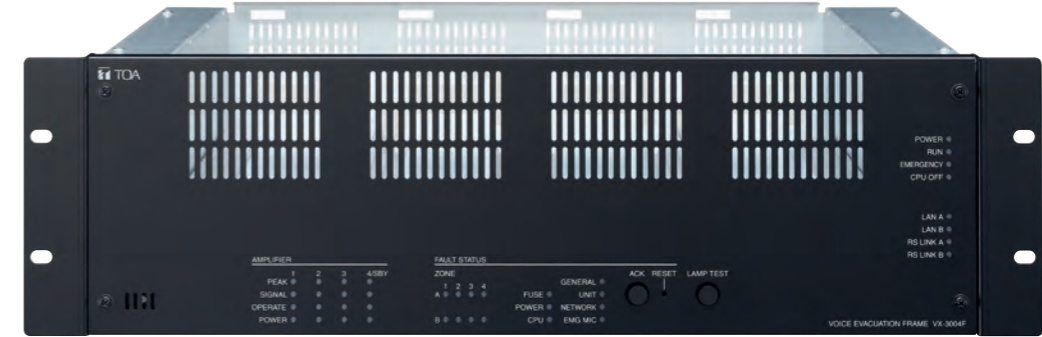
Features

- VX-3004F: up to 4 amps (1 zone - 1 amp, 4 AB-zones or 3 AB zones + standby amp)
- VX-3008F: up to 3 amps (8 zones switching between 2 amps + standby amp or 8 zones freely assignable to 1 of 2 amps)
- VX-3016F: up to 2 amps (16 switched zones + standby amp or 2 x 8 switched zones)

- All mandatory indications by EN54-16
- Status indication for each speaker line
- Fault acknowledge and lamp test button
- Input DSP: flexible filtertypes and compressor
- Output DSP: flexible filtertypes, compressor and delay up to 2.7 sec.

Options

- Q-SX-200EL: Pilot Tone Detection Module (VX-3004F)
- VM-300SV: Pilot Tone Detection Module (VX-3008F / VX-3016F)

Specifications

	VX-3004F	VX-3008F	VX-3016F
Power Source		31 VDC (operating range: 20 – 40 VDC)	
Speaker Output	4 AB Zones	8	16
Power Amplifier	4	3	2
Audio Input		4 (Line: -20 dBV / Mic: -60 dBV, phantom power selectable)	
RM Link		2 (max. 8 RM)	
LAN		2	
Control Input		16 + 2 (FDS)	
Control Output		8 + 3 (CPU OFF)	
ATT Control Output	8	8	16
Finish		Panel: Surface treated steel plate, black, 30 % gloss, paint	
Dimensions (W x H x D)		482 x 132.6 x 345 mm (19", 3U)	
Weight	7.6 kg		7.9 kg

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VX-3000 Series / System Amplifier / **VX-015DA / VX-030DA / VX-050DA / IES-2000**

VX-015DA / VX-030DA / VX-050DA

- Low loss modular class D amplifiers
- Modules to be mounted in the frame units
- Three different power levels: 150 W, 300 W or 500 W
- Can easily be removed or replaced simply by unplugging them; no need for special tools
- Dust filter, easy to clean

- 100 V Output without transformer resulting in light-weight units
- Fuse easily accessible from rear

IES-2000 Series

- Managed Ethernet Switches
- Several redundancy modes: STP, RSTP, ring
- Mounting on DIN rail

Specifications

	VX-015DA	**VX-030DA**	**VX-050DA**
Power Source	31 VDC (operating range: 20 – 40 VDC)		
Amplification System	Class D		
Rated Output Power	150 W (100 V)	300 W (100 V)	500 W (100 V)
Supported Loads	50 V / 70 V / 100 V		
Frequency Response	40 Hz – 16 kHz ± 3 dB		
Distortion	1 % or less (at 100 V line, A-weighted)		
Finish	Surface-treated steel plate		
Dimensions (W x H x D)	79 x 91 x 358.2 mm		
Weight	1.4 kg		

Specifications

	IES-2042FX-MM-SC	**IES-2042FX-SS-SC**	**IES-2060**
Supply Voltage	12 – 48 VDC		
Power Consumption (typ.)	7 W		5 W
Network Ports	4 x RJ45, 2 x SC		6 x RJ45
Fiber optical cable type	Multi-mode; 62.5/125 μm 50/125 μm	Single-mode 9/125 μm	-
Max. Cable Lengh	RJ45: 100 m, SC: 2 km	RJ45: 100 m, SC: 30 km	RJ45: 100 m
Fault Output	Relay, 24 VDC, 1 A		
Dimensions (W x H x D)	54.2 x 154.4 x 106.1 mm		
Weight	0.67 kg		0.66 kg

VX-3000 Series / Power Supply / **VX-3000DS / VX-3150DS-EB**
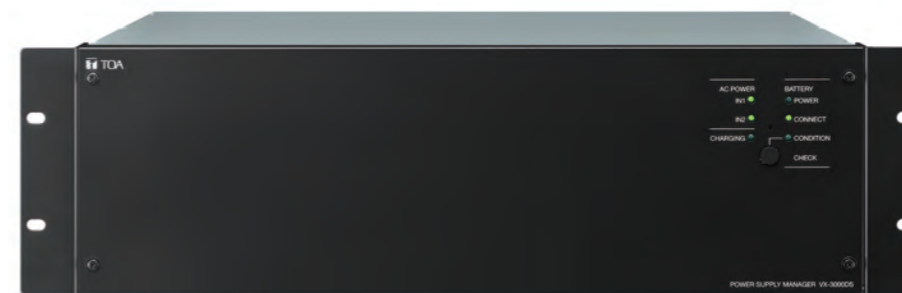
VX-3000DS / VX-3150DS-EB

- DC power supply to all system components
- Combination of two built-in power source units with a high-performance charger
- Automatical switch to auxiliary battery power if the AC power supply is down
- VX-3000DS: EN 54-4 certified, Certificate No: 1134-CPR-137

Specifications

	VX-3000DS	**VX-3150DS-EB**
Power Source	220 – 230 V AC, 50 / 60 Hz	
Power Consumption	2800 W max. in total (at rated output with charging), 350 W max. each (EN 60065)	Approx. 1460 W max. in total (at rated output with charging), 460 W max. each (EN 60065)
DC Power Output (AC mode)	Rated output: 2300 W (31 V, 72.5 A, total DC power output), Peak output: 2780 W (29 V, 50 A, total DC power output)	Rated output: 1140 W (31 V, 25 A, total DC power output), Peak output: 1280 W (29 V, 48 A, total DC power output)
DC Power Output	8 x 31 V (19 – 33 V) 25 A max. each, M4 screw terminal, distance between barriers: 11 mm 3 x 31 V (19 – 33 V) 5 A max. each, removable terminal block (3 x 2 pins) 1 x 24 V (16 – 25 V) 0.3 A max., removable terminal block (1 x 2 pins)	
Charging Method	Temperature compensated trickle charging	
Charging Output Voltage	27.3 V ±0.3 V (at 25 ℃), Temperature correction coefficient: -40 mV/℃	
Battery Connection	One each positive and negative terminal, applicable cable diameter: AWG 6 – AWG 0 (AWG 1/0) (16 mm² – 50 mm²) Line resistance within 4 mΩ / total	
Control Connector DS LINK IN/OUT	RJ45 female connector for connecting the system and cascade connection Shielded Twisted-pair straight cable (TIA/EIA-568A standard) Type of control signal: Battery check, AC power status, DC power status, charging circuit failure, battery failure, and communication	
Panel Indicator	AC power IN 1, IN 2 (Green), Charging (Green), Battery power (Green), Battery connect (Green), Battery condition (Green)	AC power IN 1, Charging (Green), Battery power (Green), Battery connect (Green), Battery condition (Green)
Finish	Panel: Surface-treated steel plate, black, 30 % gloss, paint	
Dimensions (W x H x D)	482 x 132.6 x 400.5 mm (19", 3U)	
Weight	11.8 kg	9 kg

VX-3000 Series / Emergency Remote Microphone / **RM-200SF / RM-320F**

Features

- For emergency broadcast
- For activation of emergency mode, start and stop automatic broadcasts of emergency announce-ments, reset emergency signals, and live microphone announcements
- CPU-switch for emergency broadcast to all zones even in case of a CPU error

- Up to 4 Key Extension Units per Emergency Remote Microphone

Options

- RM-320F: Key Extension Unit
- RM-210: Key Extension Unit
- WB-RM200: Wall Mounting Bracket

Specifications

	RM-200SF	**RM-320F**
Power Source	24 V DC (operating range: 15 – 40 V DC)	From RM-200SF
Distortion	Under 1 %	-
Frequency Response	200 Hz – 15 kHz	-
Signal-to-Noise Ratio	Over 55 dB	-
Audio Output	0 dBV, 600 Ω, balanced	-
Microphone	Unidirectional dynamic microphone AGC	-
Volume Control	Microphone, speaker	-
Key Extension	Max. 4 RM-320F	20 keys, freely assignable
Finish	ABS resin, bluish gray (PANTONE 538 or its equivalent)	
Dimensions (W x H x D)	200 x 215 x 95 mm	175 x 215 x 70 mm
Weight	1.48 kg	700 g

VX-3000 Series / Remote Microphone / **RM-300X / RM-210F**

Features

- For both emergency and general purpose broadcast
- Zone selection or all call
- PC-programmable system software permits desired functions to be assigned to individual function keys (equipped with 2 LED indicators)
- AUX Input for BGM distribution

- RM-210F: Key Extension Unit with 10 additional keys (up to 7 units can be used with each RM-300X Remote Microphone)

Options

- AD-246: Power Supply Unit
- WB-RM200: Wall Mounting Bracket

Specifications

	RM-300X	**RM-210F**
Power Source	24 V DC (operating range: 15 – 40 V DC), supplied from the audio input unit or DC input power supply connector (when the optional AD-246 Power Supply Unit used)	From Remote Microphone
Current Consumption	Under 240 mA	Under 80 mA (from Remote Microphone)
Audio Output	0 dBV, 600 Ω, balanced	-
External Microphone Input	-40 dB, 2.2 kΩ, unbalanced, mini jack, phantom powering	-
Frequency Response	100 Hz – 20 kHz	-
Distortion	Under 1 %	-
Signal-to-Noise Ratio	Over 60 dB	-
Volume Control	Microphone volume control, Monitor speaker volume control	-
Key Extension	Max. 7 RM-210F	10 keys, freely assignable
Maximum Cable Distance	1,200 m	-
Finish	ABS resin, black	
Dimensions (W x H x D)	190 x 76.5 x 215 mm (gooseneck microphone excluded)	110 x 76.5 x 215 mm
Weight	850 g	350 g

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VX-3000 Series / **System Configuration**

Area 1: Conference Area

Conference Rooms

Zone 1 (A + B)

Wireless Microphone

UP-MV-206

Local Audio Source

Zone 2 (A + B)

Wireless Microphone

UP-MV-206

Local Audio Source

Zone 3 (A + B)

Wireless Microphone

UP-MV-206

Local Audio Source

Zone 4 (A + B)

Wireless Microphone

UP-MV-206

Local Audio Source

Rack

VX-3000DS

Power Supply Manager

VX-3004F

Frame incl. Amplifier

HUB

Area 2: Shopping Arcade

Rack (BGM central management)

VX-3000DS

Power Supply Manager

VX-3004F

Frame incl. Amplifier

Audio Source
Audio Source
Audio Source
Audio Source

VX-3008F

Frame incl. Amplifier

Spot Announcer

Audio Source
Audio Source
Audio Source

VX-3016F

Frame incl. Amplifier

HUB

Mall

ANC Zone 5 ~ 8 (A + B)

Zone 5 ~ 8 (A + B)

Zone 9 ~ 16

Zone 17 ~ 32

Control Room

RM-300X + RM-210F + RM-210F

Information Counter 1   Information Counter 2

RM-300X   RM-300X + RM-210F

Fire Panel 1

RM-200SF + RM-320F

Area 3: Warehouse

Storage Areas

Zone 33 ~ 48

Zone 49 ~ 64

Rack

HUB

VX-3016F

Frame incl. Amplifier

VX-3016F

Line extension without Amplifier

VX-3000DS

Power Supply Manager

Fire Panel 2

RM-200SF

Warehouse Management

RM-300X

Area 4: Center Management

Rack

HUB

VX-3004F

Frame incl. Amplifier

Local Audio Source

Local Audio Source

VX-3008F

Frame incl. Amplifier

VX-3008F

Frame incl. Amplifier

VX-3008F

Frame incl. Amplifier

VX-3000DS

Power Supply Manager

Training Rooms

Zone 65 (A + B)   Wireless Microphone

Zone 66 (A + B)   Wireless Microphone

Offices

Zone 67 ~ 68 (A + B)

Zone 69 ~ 76

Zone 77 ~ 84

Reception

RM-300X   iPod™

Administration

RM-300X

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Voice Alarm Systems / **Reference**

» What I appreciate the most about TOA is the great quality of services, full commitment & professional assistance they provide at every stage of project realization. «

Piotr Sosnowski, Tender Manager & Project Leader, AAT Holding SA, Poland

While working on the Wisher Enterprise project, as well as during other mutual investments realized so far, we have always received TOA's full technical and product support. We strongly believe these values are the foundation on which the success of our collaboration has been built.
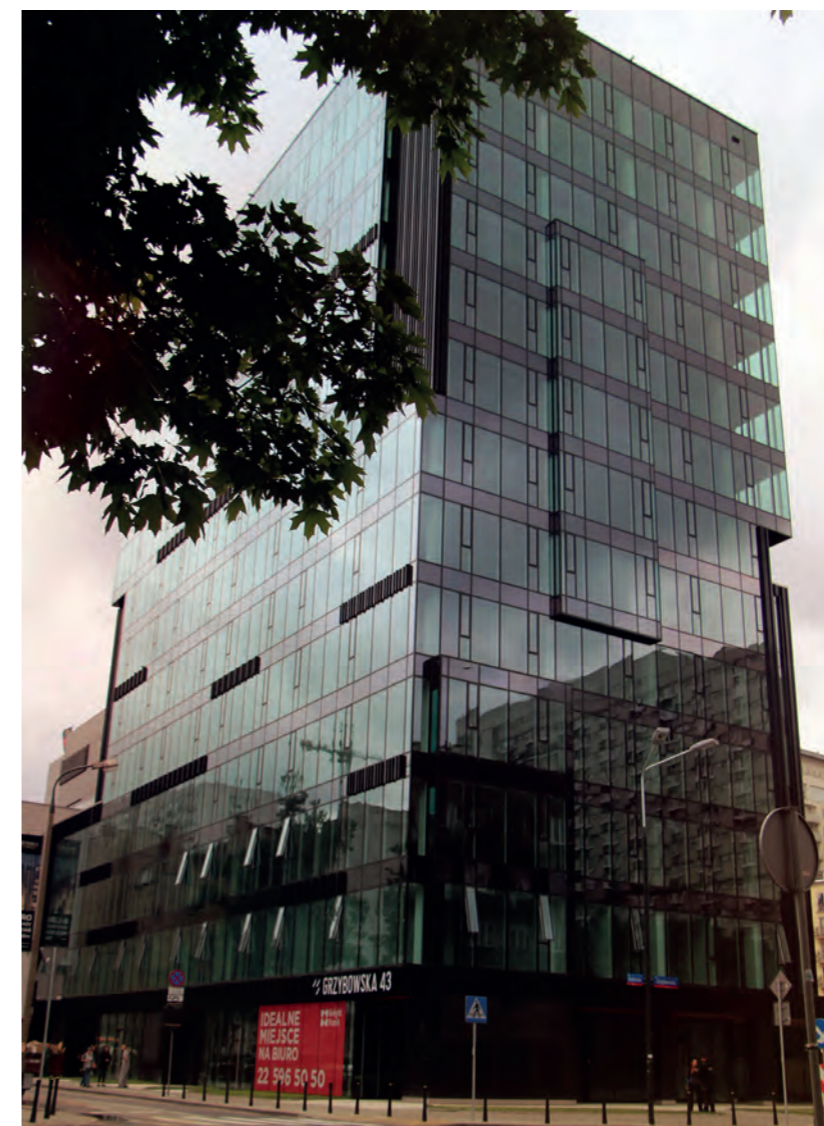
Wisher Enterprise is a 13-storey office building with 10,100 m² of office space and 550 m² of retail space. It is located within the central business district of Warsaw, close to the city's most important arteries. The skyscraper has been fitted with VX-2000 Voice Evacuation System ideal for multizone applications.

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01 VOICE ALARM SYSTEMS /

VM-3000 Series

Cost-effective system for small to medium sized applications.

The VM-3000 is a cost-effective integrated public address system designed to fulfill the EN 54 European regulation for voice alarm and also engineered with powerful digital signal processor (DSP), ensuring high quality audio broadcasting for proper speech intelligibility.

The compact design enables the system to fit best in various small to medium sized applications such as schools, shopping centres or restaurants.

- Cost-effective integrated public address and voice evacuation system
- Easy installation and compact design
- EN 54 certified, UL 2572 and CAN/ULC-S576 listed
- Intuitive and userfriendly configuration through dedicated PC-Software
- Easy integration into existing building management systems
- Convenient remote maintenance saves time, effort and costs

Certificate No: 1438-CPR-0180

Maximum System Capacity

Maximum System Capacity	
Output Power	3,600 W
Speaker Zones	60
Remote Mic Connection	8

Features

- 6 – 60 assignable speaker zones
- 4 – 13 MIC/LINE audio inputs (volume setting for each audio output)
- 8 remote microphones max. (4 x general + 4 x emergency; EN 54: max. 2 x emergency or 4 x general + 1 x emergency)
- 2 selectable BGM audio inputs
- 8 priority levels
- 1,000 system events can be logged
- 6 high quality electronic voice messages

- LCD display of current status and configuration settings
- Built-in emergency microphone
- Simultaneous broadcast of 2 emergency messages (alert and evacuation)
- Remote maintenance via LAN
- Continuous speaker line monitoring without interruption of BGM or paging announcements
- Modbus protocol ready
- Complete fault detection and indication

Applications

- Schools
- Shopping centres
- Bars & restaurants
- Hotels
- Gymnasiums

VM-3000 Series / System Management Amplifier / VM-3240VA / VM-3360VA

Features

- 1 unit per system
- 2 models available: 240 W or 360 W power output
- 6 recorded general announcements and 2 recorded emergency announcements
- 8 remote microphones max. (up to 4 emergency remote microphones)
- 6 zones selectable from the front panel
- Built-in high quality electronic voice message

Options

- VM-3240E: 240 W Extension Amplifier
- VM-3360E: 360 W Extension Amplifier
- RM-300MF: Emergency Microphone
- RM-200M: General Remote Microphone
- IT-450: Input Transformer
- VM-300SV: Pilot Tone Detection Module

Specifications

	VM-3240VA	VM-3360VA
Applicable Model	VM-3240E, VM-3360E, VP-2241, VP-2421, VX-2000DS	
Power Requirement	230 V AC, 50 / 60 Hz	
Power Consumption (AC mains)	600 W (with rated output signal), 260 W (according to EN 60065)	850 W (with rated output signal), 380 W (according to EN 60065)
Rated Output	240 W	360 W
Frequency Response	50 Hz – 20 kHz, ±3 dB (at 1/3 rated output)	
Distortion	Under 0.7 % (at rated output, 1 kHz)	
Signal-to-Noise Ratio	Over 85 dB	
Inputs	Input 1 – 3: -50 dBV (MIC) / -10 dB (LINE) (changeable), 600 Ω, electronically balanced combined, XLR connector (female) / phone jack Input 4: -50 dBV (MIC) / -10 dB (LINE) (changeable), 600 Ω, electronically balanced, removable terminal block (14 x 2 pins) BGM 1 – 2: -10 dB, 10 kΩ unbalanced, RCA pin jack (2 x 2) External amplifier Input: 100 V Line removable terminal block (14 pins)	
Outputs	Speaker output 1 – 6: Total within rated output, removable terminal block (14 pins) Direct output from internal or external amplifier, removable terminal block (16 pins) Recording output BGM / Paging 0 dBV, 10 kΩ, unbalanced, RCA pin jack	
Control	Input 1 – 8: No-Voltage make contact input, open voltage: 24 V DC, short-circuit current: under 2 mA, removable terminal block (14 x 2 pins) Output 1 – 8: Isolated open collector output, withstand voltage: 30 V DC, operating current: under 10 mA, removable terminal block (14 x 2 pins)	
Emergency Control	Input 1 – 5: No-Voltage make contact input, open voltage: 24 V DC, short-circuit current: under 2 mA, RJ45 female connector Input 6: Isolated voltage input: Inactive; -24 V ± 20 % / Active; +24 V ± 20 %, RJ45 female connector Status out: Relay contact output, withstand voltage: 40 V DC, operating current: 2 – 300 mA, RJ45 female connector	
Regulated Voltage Output	24 V DC, maximum feeding current 0.3 A	
Finish	Panel: Surface-treated steel plate, black, 30 % gloss, paint	
Dimensions (W x H x D)	482 x 132.6 x 431.2 mm (19", 3U)	
Weight	16.5 kg	19 kg

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VM-3000 Series / Pilot Tone Detection Module / **VM-300SV**

EN 54-16
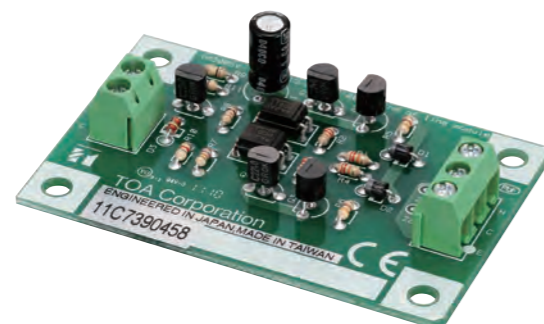
Features

- Speaker line failure can be detected with high accuracy
- Module for installation between the speaker line end and the emergency input terminal of the VM-3240VA, VM-3360VA, VM-3240E or VM-3360E

Specifications

	VM-300SV
Power Source	Supplied from VM-3240VA, VM-3360VA, VM-3240E, VM-3360E
Power Consumption	0.2 W
Speaker Line Input	Screw connector, applicable cable diameter: AWG 24 – AWG 19
Contact Output	Connected to the emergency contact input of VM-3240VA, VM-3360VA, VM-3240E, VM-3360E Connector cable: Twisted pair cable (shielded type is recommended) Max. cable lenght: 10 m
Speaker Line	Max. cable lenght: 500 m Max. load: 100 W Applicable only for 100 V speaker line
Dimensions (W x H x D)	70 x 18 x 45 mm
Weight	0.02 kg

VM-3000 Series / Extension Amplifier / **VM-3240E / VM-3360E**

EN 54-16

Features

- System management amplifier can be expanded by connecting up to 9 extension amplifiers
- 2 models available: 240 W or 360 W
- 6 speaker line outputs
- 8 control inputs and 8 control outputs for general purpose
- 6 control inputs for emergency purpose and 3 control outputs for status information
- Connection to system management amplifier via VM Link

Options

- VM-3240VA: 240 W System Amplifier
- VM-3360VA: 360 W System Amplifier
- IT-450: Input Transformer
- VM-300SV: Pilot Tone Detection Module

Specifications

	VM-3240E	VM-3360E
Applicable Model	VM-3240VA, VM-3360VA, VP-2241, VP-2421, VX-2000DS	
Power Requirement	230 V AC, 50/60 Hz	
Power Consumption (AC mains)	600 W (with rated output signal), 260 W (according to EN 60065)	850 W (with rated output signal), 380 W (according to EN 60065)
Rated Output	240 W	360 W
Frequency Response	50 Hz – 20 kHz ±3 dB (at 1/3 rated output)	
Distortion	Under 0.7 % (at rated output, 1kHz)	
Signal-to-Noise Ratio	Over 85 dB	
Inputs	External amplifier Input: 100 V Line removable terminal block (14 pins) Local input -50 dB (Mic) / -10 dB (Line), 600 Ω / electronically balanced, removable terminal block (14 x 2 pins)	
Outputs	Speaker output 1 – 6: Total within rated output, removable terminal block (14 pins) Direct output from internal or external amplifier, removable terminal block (16 pins)	
Control	Input 1 – 8: No-Voltage make contact input, open voltage: 24 VDC, short-circuit current: under 2 mA, removable terminal block (14 pins) Ouput 1 – 8: Isolated open collector output, withstand voltage: 30 VDC, operating current: under 10 mA, removable terminal block (14 pins)	
Emergency Control	Input 1 – 5: No-Voltage make contact input, open voltage: 24 VDC, short-circuit current: under 2 mA, female connector RJ45 Input 6: Isolated voltage input: Inactive; -24 V ±20 % / Active; +24 V ±20 %, RJ45 female connector Status out: Relay contact output, withstand voltage: 40 VDC, operating current: 2 – 300 mA, RJ45 female connector	
Regulated Voltage Output	24 VDC, maximum feeding current 0.3 A	
Finish	Panel: Surface-treated steel plate, black, 30 % gloss, paint	
Dimensions (W x H x D)	482 x 132.6 x 407 mm (19", 3U)	
Weight	16.5 kg	19 kg

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VM-3000 Series / Emergency Remote Microphone / **RM-300MF / RM-320F**

RM-300MF

Alarm Switch

Microphone

Function keys

RM-320F

RM-300MF

- Exclusively for broadcasts made by firemen in emergency situations
- For activation of emergency mode, start and stop automatic broadcasts of emergency announcements, reset emergency signals and live microphone announcements
- CPU-switch for emergency broadcast to all zones even in case of a CPU error

RM-320F

- 20 function buttons per extension unit
- System software allows assigning of functions to the individual keys
- Up to 3 RM-320F Key Extension Units can be connected to the Emergency Microphone

Specifications

	RM-300MF	**RM-320F**
Applicable Model	VM-3240VA, VM-3360VA, RM-320F	RM-300MF, RM-200XF, RM-200SF
Power Requirement	24 VDC (operating range: 14 – 28 VDC)	From RM-300MF / RM-200M
Current Consumption	100 mA (up to 550 mA with 3x RM-320F)	180 mA max. (in terms of DC power inputs of RM-300MF)
Frequency Response	200 Hz – 15 kHz	-
Distortion	Under 1 %	-
Signal-to-Noise Ratio	Over 55 dB	-
Audio Output	0 dBV, 600 Ω, balanced	-
Microphone	Unidirectional dynamic microphone	-
Volume Control	Microphone, buzzer	-
Key Extension	Max. 3 RM-320F	20 keys, freely assignable
Connection Cable	Shielded CPEV cable or Category 5 STP cable, by M3 screw terminal	Connection by way of dedicated cable
Finish	ABS resin, bluish gray (PANTONE 538 or its equivalent)	
Dimensions (W x H x D)	200 x 215 x 82.5 mm	175 x 215 x 70 mm
Weight	1.1 kg	0.7 kg

VM-3000 Series / General Remote Microphone / **RM-200M / RM-210**

RM-200M

RM-210

RM-200M

- 11 function keys, 10 freely assignable
- Zone, group and all-call paging, and activating pre-recorded messages
- Extraordinary clarity and freedom from distortion by built-in compression circuit
- Up to 4 RM-200M per system management amplifier
- Up to 800 m total cable length

RM-210

- Key Extension Unit with 10 freely assignable keys

Options

- WH-4000A: Headset
- WB-RM200: Wall Mounting Bracket

Specifications

	RM-200M	**RM-210**
Applicable Model	VM-3240VA, VM-3360VA, RM-210	RM-200M, RM-200X, RM-200XF, RM-200SA, RM-200SF
Power Requirement	24 VDC (operating range: 14 – 28 VDC)	From remote microphone
Current Consumption	100 mA maximum	20 mA max. (in terms of RM-200M's DC power input)
Frequency Response	100 Hz – 20 kHz	-
Distortion	Under 1 %	-
Signal-to-Noise Ratio	Over 60 dB	-
Audio Output	0 dBV, 600 Ω, balanced	-
Microphone	Unidirectional electret condenser microphone	-
Zone Control	Assignable by PC setting software, Zones, Groups, All call	
Voice Message Control	Activation of 6 messages	
Key Extension	Max. 4 RM-210	10 keys, freely assignable
Connection Cable and Connector	Category 5 STP cable, RJ45 connector	Connection by way of dedicated cable
Finish	ABS resin, bluish gray (PANTONE 538 or its equivalent)	
Dimensions (W x H x D)	190 x 76.5 x 215 mm (Gooseneck microphone excluded)	110 x 76.5 x 215 mm
Weight	0.75 kg	0.35 kg

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VM-3000 Series / **System Configuration**

Configuration BGM-Announcement: Background music is preserved during announcements in other zones.

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PM-660D
Global Announcement

Rack

Audio Source   Audio Source

RM-200M
General Remote Microphone

RM-300MF
Emergency Microphone

AC mains

Zone 1 ~ 6

VM-3360VA (360 W)
System Management
Amplifier

VP-2421
Amplifier

AC mains

Zone 7 ~ 12

VM-3240E (240 W)
Extension Amplifier

VP-2241
Amplifier

PM-660D
Local Announcement

AC mains

Zone 13 ~ 18

VM-3360E (360 W)
Extension Amplifier

VP-2421
Amplifier

UP-MV-206
Local Preamplifier

AC mains

Zone 19 ~ 24

VM-3240E (240 W)
Extension Amplifier

VX-200PS

VX-2000DS

Battery

VP-2241
Amplifier

24 V=

Emergency Power Supply   AC mains

VM-3000 Series / **Reference**

»We appreciated the reliability and superior service of TOA proven in numerous security projects.«

Andreas Schlüter, CCDWeber GmbH
Germany

At each stage of our long-term partnership TOA convinced us of their professional and personal skills and was able to realize very challenging projects, e.g. the construction of the new cruise terminal CC3 in Hamburg.

Also short-term projects have always been dealt with promptly, on schedule and with an extraordinary engagement. We are looking forward to continue our successful and enjoyable collaboration.

In June 2015 one of the most modern cruise terminal was opened in Hamburg. The installed solution combines VM-3000, SX-2000 system as well as their components and also comprises SR-S4 speakers. The installation ensures reliable voice alarm in any case of emergency and guarantees safe passenger handling.

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01 VOICE ALARM SYSTEMS /

VX-2000 Series

Flexible system for simple as well as complex installations.

The VX-2000 Series is a versatile broadcast and public address system that fulfills the requirements of the applicable standards for general purpose and emergency broadcasts.

It's fully modular configuration facilitates assembling a system that is ideally optimized for a particular application with specific modules. This makes the VX-2000 series a powerful and cost-effective platform for almost any application.

- High reliability
- Non-interruptive surveillance
- Network-compatible design
- Individual assignment
- Reasonable system status
- Automatic dual broadcasting
- Versatile software
- Systemdesign support tool available

EN 54 16

Certificate No: 1134-CPR-110

Maximum System Capacity

Output Power	40,000 W
Speaker Zones	80
Remote Mic connection	8

Features

- Integrated system for public address and voice evacuation
- Fulfills all requirements of the applicable standards
- System status can be confirmed on the central indication panel and remote microphones
- Optional linkable central control units possible
- OPC Client for connection to external systems

- Simultaneous 2-channel recorded message broadcasts
- Continuous speaker line monitoring without interruption of BGM or paging announcements
- Convenient multi-language software
- Event memory for efficient system maintenance
- Remote maintenance with optional accessories

Applications

- Department stores
- Hotels
- Hospitals
- Exhibitions
- Schools
- Retail- and supermarkets
- Train stations

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VX-2000 Series / System Manager / **VX-2000**

EN 54 16

Features

- Functions as the VX-2000 System Manager
- Input matrix unit that assigns input signals to 4 audio buses
- Up to 8 units of input modules can be mounted in the System Manager
- The VX-2000 can control audio signal routing, priorities, and contacts to peripheral equipment
- Input and output control settings are configured by way of a PC software
- Up to 2,000 system events can be logged and viewed from a PC
- Rack-mountable, 3 units height

Options

- VX-200XR: Remote Mic Input Module
- VX-200XI: Audio / Control Input Module
- M-01F, U-01F, U-01R, U-03R, U-01S: Input Modules
- VSX-2000OP-SW: VX-SX Operation Software Kit

Specifications

	VX-2000
Applicable Model	VX-2000DS, VX-3000DS
Power Source	24 V DC (operating range: 20 – 40 V DC)
Current Consumption	Under 650 mA (20 V DC)
Number of module slots	8
Audio Link Output	Number of audio buses: 4, 0 dBV, electronically balanced, RJ45 female connector
Monitor Output	0 dBV, electronically balanced, XLR receptacle (3 pins)
Frequency Response	20 Hz – 20 kHz
Distortion	Under 0.5 %
Signal-to-Noise Ratio	Over 60 dB
Cross Talk	Under -60 dB (1 kHz, 0 dBV)
Controls	16 inputs, RJ45 connector x 2 16 outputs, RJ45 connector x 2
Chime Tone	Built-in chime: 4-tone chime (up) / 4-tone chime (down) / 2-tone chime / Gong
Communication System	PC (setting software to be installed): D-sub connector (9 pins), cross cable, RS-232C, VX-2000SF: RJ45 connector, twisted-pair straight cable (TIA/ EIA-568A standard), LONWORKS RS-485
Finish	Panel: Surface-treated steel plate, black, 30 % gloss, paint
Dimensions (W x H x D)	482 x 132.6 x 337 mm (19″, 3U)
Weight	6.4 kg

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VX-2000 Series / System Amplifier / **VP-2064 / VP-2122 / VP-2241 / VP-2421**

VP-2421

EN 54 16

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

- 4 different power configurations:
  - 60 W x 4 Channels (VP-2064)
  - 120 W x 2 Channels (VP-2122)
  - 240 W x 1 Channel (VP-2241)
  - 420 W x 1 Channel (VP-2421)
- Usable as standby amplifier for emergency switch over

- Power Amplifier uses 1 VP-200VX or VP-200VX-BGM Power Amplifier Input Module per channel
- Programmable power amplifier standby function extends battery-powered operation time in emergency cases

Options

- VP-200VX: Power Amplifier Input Module
- VP-200VX-BGM: Power Amplifier Input Module with additional input for BGM

Specifications

	VP-2064	VP-2122	VP-2241	VP-2421
Applicable Model	VX-2000DS, VX-3000DS, System VX-2000 / SX-2000		VX-2000DS, VX-3000DS, System VM-3000 / VX-2000 / SX-2000	
Power Source	28 V DC (operating range: 20 – 40 V DC) M4 screw terminal			
Current Consumption (EN60065)	4.8 A in total		7.6 A	
Rated Output Power	4 x 60 W	2 x 120 W	1 x 240 W	1 x 420 W
Output Voltage/Impedance	167 Ω (100 V line), 83 Ω (70 V line), 41 Ω (50 V line) (selectable by the internal wiring change)	83 Ω (100 V line), 41 Ω (70 V line), 21 Ω (50 V line) (selectable by the internal wiring change)	41 Ω (100 V line), 21 Ω (70 V line), 10 Ω (50 V line) (selectable by the internal wiring change)	24 Ω (100 V line), 12 Ω (70 V line), 6 Ω (50 V line) (selectable by the internal wiring change)
Number of Channels	4	2	1	
Input	Specified by input module VP-200VX			
Number of Module Slots	4, usable module: VP-200VX / VP-200VX-BGM	2, usable module: VP-200VX / VP-200VX-BGM	1, usable module: VP-200VX / VP-200VX-BGM	
Output	Power amplifier output (speaker line): M3.5 screw terminal			
Frequency Response	40 Hz – 16 kHz, ±3 dB (at 1/3 rated output)			
Distortion	Under 1 % (at rated output, 1 kHz)			
Signal-to-Noise Ratio	Over 80 dB			
Panel Indicator	Channel power indicator: 4 channels, dual colour LED; Overheat indicator: Yellow LED			
Finish	Panel: Surface-treated steel plate, black, 30 % gloss, paint			
Dimensions (W x H x D)	482 x 88.4 x 340.5 mm (19", 2U)			
Weight	11.2 kg	9.1 kg	8.1 kg	9.5 kg

VX-2000 Series / Power Supply / **VX-2000DS / VX-200PS / VX-2000PF**

VX-2000DS

VX-200PS

VX-2000PF

EN 54 4

VX-2000DS

- Supplies the DC power to each component in the VX-2000 system by means of the VX-200PS Power Supply Unit
- Keeps the batteries charged
- Ambient temperature controlled charging voltage
- Matching battery: 2 x 12 V sealed lead batteries
- Automatically switch-over in case of AC mains failure
- EN 54-4 certified, Certificate No: 1134-CPR-083

VX-200PS

- Power Supply Unit
- 2 DC output channels per unit
- EN 54-4 certified, Certificate No: 1134-CPR-083

VX-2000PF

- Frame for rack mounting of up to 3 VX-200PS Power Supply Units
- EN 54-16 certified, Certificate No: 1134-CPR-110

Specifications

	VX-2000DS	VX-200PS	VX-2000PF
Applicable Model	System VM-3000 / VX-2000 / SX-2000, not the VP-3000 Series amplifier	VX-2000DS	VX-200PS
Power Source	230 V AC, 50 / 60 Hz		-
Power Consumption	240 W max.	580 W	-
Applicable Battery	Panasonic LC-X1265PG / APG (65 Ah) (12 V x 2 or 4)	-	
Charging Method	Trickle charging	-	
Charging Current	5 A max	-	
Charging Output Voltage	27.3 V ±0.3 V (at 25 ℃) Temperature correction coefficient: -40 mV/℃	-	
Power Supply Input	6 / M4 screw terminal	-	
DC Power Output	6 (25 A max. each) M4 screw terminal, distance between barriers: 11 mm	Rated output: 210 W (29 V, 7.25 A) x 2, Peak output: 400 W x 2, M4 screw terminal	-
Control Connector	RJ45 female connector for connecting the VX-2000SF. Twisted-pair straight cable (TIA/EIA-568A standard) Type of control signal: Battery check, AC power status, DC power status, charging circuit failure, and battery failure	-	
Battery Connection	1 pair of positive and negative terminals, applicable cable diameter: AWG 6 – AWG 0 1/0	-	
Finish	Panel: Surface-treated steel plate, black, 30% gloss, paint	Surface-treated steel plate	Panel: Surface-treated steel plate, black, 30% gloss, paint
Dimensions (W x H x D)	482 x 88.4 x 377.6 mm (19", 2U)	135 x 118.2 x 324.8 mm	483 x 132.6 x 324.8 mm (19", 3U)
Weight	10.5 kg	13.2 kg	5.5 kg

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VX-2000 Series / Digital Power Amplifier / **VP-3154 / VP-3304 / VP-3504**

Features

- System amplifier for VX-2000 and SX-2000
- 3 different power configurations:
  - 150W x 4 Channels (VP-3154)
  - 300W x 4 Channels (VP-3304)
  - 500W x 4 Channels (VP-3504)
- Usable as standby amplifier for emergency switch over
- Compact, lightweight and energy efficient
- 4 amplifier input modules are built-in
- With BGM input ports
- Usable with VX-3000DS

Specifications

	VP-3154	VP-3304	VP-3504
Applicable Model	VX-3000DS, System VX-2000 / SX-2000		
Power Source from VX-3000DS	31 VDC (operating range: 20 – 34 VDC), DC power in: M4 screw terminal		
Amplification System	Class D		
Current Consumption	6 A (Rated Output Power), 0.6 A (Surveillance), 0.1 A (Standby), at 31 VDC, 100 V line, each channel	9 A (Rated Output Power), 0.6 A (Surveillance), 0.1 A (Standby) at 31 VDC, 100 V line, each channel	13 A (Rated Output Power), 0.6 A (Surveillance), 0.1 A (Standby) at 31 VDC, 100 V line, each channel
Rated Output Power	150 W x 4 (at 100 V line), 105 W x 4 (at 70 V line), 75 W x 4 (at 50 V line)	300 W x 4 (at 100 V line), 210 W x 4 (at 70 V line), 150 W x 4 (at 50 V line)	500 W x 4 (at 100 V line), 350 W x 4 (at 70 V line), 250 W x 4 (at 50 V line)
Output Voltage	100 V (70 V, 50 V: selectable by internal change)		
Minimum Resistive Load	67 Ω (at 100 V line), 47 Ω (at 70 V line), 33 Ω (at 50 V line)	33 Ω (at 100 V line), 23 Ω (at 70 V line), 17 Ω (at 50 V line)	20 Ω (at 100 V line), 14 Ω (at 70 V line), 10 Ω (at 50 V line)
Maximum Capacitive Load	500 nF		
Number of Channels	4		
Input	PA link: 4 channels, RJ45 connector, BGM: 4 channels, removable terminal block (5 pins) BGM INPUT (H, C, E): -10 dB/0 dB (LINE, changeable), 22 kΩ, electronically balanced BGM MUTE (G, +): no-voltage make contact input, open voltage: 15 VDC, short-circuit current: 2 mA, Volume adjustment: 4 channels		
Output	PA out (speaker line): removable terminal block (9 pins) x 1		
Frequency Response	40 Hz – 16 kHz, ±3 dB (at 100 V line, 1/3 rated output)		
Distortion	1 % or less (at 100 V line, rated output, 1 kHz)		
Signal-to-Noise Ratio	80 dB or more (at 100 V line, A-weighted)		
Crosstalk	60 dB or more (at 100 V line, A-weighted)		
Panel Indicator	Power indicator x 4 (Green), Operate indicator x 4 (Green), Input signal indicator x 4 (Green), Peak signal indicator x 4 (Red)		
Finish	Panel: Surface-treated steel plate, black, 30 % gloss, paint		
Dimensions (W x H x D)	482 x 88.4 x 390 mm (19", 2U)		
Weight	7.3 kg		7.7 kg

VX-2000 Series / Surveillance Frame / **VX-2000SF**
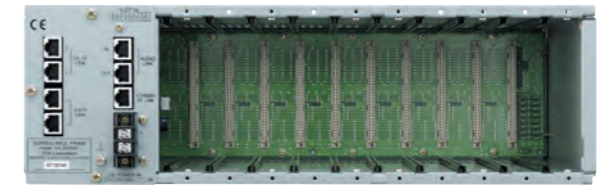
Features

- Surveillance Frame is the output matrix section of the VX-2000 system
- A total of 10 modules and control modules can be installed
- Assigns audio signals to individual zones from 4 audio buses
- Expandable to up to 8 units
- In case of power amplifier failure, output is automatically switched to the standby amplifier
- Output volume setting with PC system software
- 7 types of modules can be used (please see options)
- Rack-mountable, 3 units height

Options

- VX-200SP, VX-200SP-2, VX-200SP-ANC: Pilot Tone Detection Modules
- VX-200SZ, VX-200SZ-2: Impedance Detection Modules
- VX-200SI: Control Input Module
- VX-200SO: Control Output Module

Specifications

	VX-2000SF
Applicable Model	VX-2000DS, VX-3000DS
Power Source	24 VDC (operating range: 20 – 40 VDC)
Current Consumption	Under 2 A (40 VDC)
Number of Module Slot	10, usable modules: VX-200SZ, VX-200SZ-2, VX-200SP, VX-200SP-2, VX-200SP-ANC, VX-200SI, VX-200SO
Frequency Response	20 Hz – 20 kHz (when use VX-200SZ / VX-200SZ-2: 120 Hz – 20 kHz)
Distortion	Under 0.5 %
Signal-to-Noise Ratio	Over 60 dB
Cross Talk	Under -60 dB (1 kHz, 0 dBV)
Audio Link Input / Output	Number of audio busses: 4, 0 dBV, electronically balanced, RJ45 female connector
Standby Amplifier connection	RJ45 female connector for connecting the VP-3154, VP-3304, VP-3504, VP-2064, VP-2122, VP-2241, VP-2421 Power Amplifier
Connector	VX-2000 / VX-2000SF: RJ45 female connector x 2, LONWORKS RS-485 VX-2000DS: RJ45 connector x 2
Finish	Panel: Surface-treated steel plate, black, 30 % gloss, paint
Dimensions (W x H x D)	482 x 132.6 x 337 mm (19", 3U)
Weight	5.6 kg

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VX-2000 Series / Status Indication Panel & Ethernet Switches / **IP-EN1-EB / IES-3000**

IP-EN1-EB

IP-EN1-EB

- Status indication panel for the mandatory indications required by EN 54-16: emergency mode, general fault, fuse rupture, power fault, emergeny microphone fault, network fault, CPU fault
- With indication of faults in 8 fire areas (EN 54-16 option)

- Emergency control input from fire detection system
- General fault output allows surveillance by the fire detection system
- For VX-2000 and SX-2000 systems

IES-3000 Series

- Managed Ethernet Switches
- Several redundancy modes: STP, RSTP, ring
- Mounting on DIN rail
- For VX-2000 and SX-2000 systems

Specifications

	IP-EN1-EB
Applicable Model	VX-2000 system, SX-2000 system
Operation Voltage Range	20 – 40 VDC
Current Consumption	Max. 60 mA
Control Input	Emergency activation, Emergency reset, Silence
Activation	Contact: break, make; voltage: on, off
Contact Control	Open voltage: 24 VDC, current: 12 mA
Voltage Control	12 VDC, 12 mA (1 kΩ) / 24 VDC, 12 mA (2 kΩ)
General Fault	Potential-free NO and NC contacts, resistors can be added for surveillance
Switch Capacity	Max. 40 VDC, max. 100 mA
Connectors	Removable screw terminals, RJ45 jacks
Finish	Aluminium, black
Dimensions (W x H x D)	483 x 44 x 47 mm (19", 1U)
Weight	0.47 kg

Specifications

	IES-3080	IES-3062GT	IES-3062FX-MM-SC	IES-3062GF-MM-SC	IES-3062FX-SS-SC	IES-3062GF-SS-SC
Applicable Model	VX-2000 system, SX-2000 system					
Supply Voltage	12 – 45 VDC, 2 redundant inputs, removable screw terminal					
Power Consumption (typ.)	5 W	8 W	9 W	7 W	9 W	7 W
Network Ports	8 x RJ45, 10/100TX	6 x RJ45, 10/100TX, 2 x RJ45 1000 Base-T	6 x RJ45, 10/100TX, 2 x SC, 100FX	6 x RJ45, 10/100TX, 2 x SC, 1000SX	6 x RJ45, 10/100TX 2 x SC, 100FX	6 x RJ45, 10/100TX 2 x SC, 1000LX
Fiber optical cable type	-		Multi-mode (850 nm, 50/125 µm to 62.5/125 µm)		Single-mode (1310 nm (9/125 µm))	
Max. Cable Lengh	RJ45: 100 m		RJ45: 100 m, SC: 2 km	RJ45: 100 m, SC: 550 m	RJ45: 100 m, SC: 30 km	RJ45: 100 m, SC: 10 km
Fault Output	NO contact, 24 VDC, 1 A, removable screw terminal					
Dimensions (W x H x D)	56 x 144.3 x 106.1 mm					
Weight	0.71 kg	0.722 kg	0.735 kg	0.74 kg	0.735 kg	0.74 kg

VX-2000 Series / Audio Network Adapter / **NX-100S / NX-300W**

NX-100S

NX-300W

NX-100S

- Audio network adapter for transmitting audio and control signals via LAN
- Transmission to up to 64 NX-100S simultaneously
- Allows de-centralised installation of the VX-2000 system

NX-300W

- Audio network adapter for transmitting audio and control signals via LAN
- Dual-channel capable of bi-directional (full-duplex) dual mono signals
- Up to 500 NX-300s can be connected to each other via LAN
- Up to 1,000 links can be established
- 1 input audio signal can be streamed to max. 16 NX-300W (unicast) or max. 64 NX-300W (multicast) simultaneously

Options

For installation in cabinet racks:
- MB-15B-BK: Half Width Blank Panel (installation of one unit)
- MB-15B-J: Rack Joint Bracket (installation of two units)

Specifications

	NX-100S	NX-300W
Applicable Model	VX-2000 system	VX-3000 system (2017)
Supply Voltage	24 VDC	
Current Consumption	200 mA	310 mA
Audio Input	Balanced, sensitivity -58/0 dBV selectable	
Audio Output	Balanced, 0 dBV, min. 600 Ω	
Control Inputs	8 (12 VDC, 10 mA)	
Control Outputs	8 (open collector, 30 VDC, 50 mA)	8 (open collector, 30 VDC, 50 mA), 2 Relais
Network Connection	RJ45, 10BASE-T/100BASE-TX, automatic	
Finish	Steel plate, painted black	
Dimensions (W x H x D)	210 x 44.7 x 188 mm (1/2 19", 1U)	
Weight	1.2 kg	

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VX-2000 Series / Emergency Remote Microphone / **RM-200XF**

Alarm Switch

RM-200XF   Microphone   Function keys

Features

- For emergency broadcast and general purpose broadcast applications
- Push-button zone selection
- PC-programmable system software allows assigning of functions to the individual keys (each with 2 LED)
- Per 1 RM-200XF up to 10 extensions of RM-210 or RM-320F

- Up to 4 Emergency Microphones per 1 system
- CPU-switch for emergency broadcast to all zones even in case of a CPU error
- Automatic failure detection of emergency keys and in the signal path (control and audio signals) between microphone (including microphone element) and system manager

Options

- RM-210: Key Extension Unit
- RM-320F: Key Extension Unit
- WB-RM200: Wall Mounting Bracket

Specifications

	RM-200XF
Applicable Model	VX-200XR in VX-2000, RM-210, RM-320F
Power Source	24 VDC (operating range: 16 – 40 VDC)
Current Consumption	Under 200 mA (RM-200XF), 850 mA (with 10 RM-210s connected)
Audio Output	0 dBV, 600 Ω, balanced
Hand-Held Microphone	Dynamic microphone, function switch (default: press-to-talk), microphone element fault detection
Frequency Response	200 Hz – 15 kHz
Signal-to-Noise Ratio	Over 55 dB
Functions	Internal monitor speaker 200 mW / Volume control: microphone, monitor speaker
Operation Keys	5 (including hand-held microphone's switch), extendable up to 105 (with 10 RM-210s connected)
Key Extension	Max. 10 RM-210 or 5 RM-320F, 10 keys per RM-210, 20 keys per RM-320F
Communication	System: LONWORKS twisted pair free topology transceiver, Distance: max. 500 m (Free topology wiring)
Connection Cable and Connector	Category 5 STP cable, plug-in screw connector
Finish	ABS resin, bluish gray (PANTONE 538 or equivalent)
Dimensions (W x H x D)	200 x 215 x 82.5 mm (excluding the coiled cord)
Weight	1.2 kg

VX-2000 Series / Remote Microphone / **RM-200X / RM-210**

RM-200X   RM-210

Features

- For emergency broadcast and general purpose broadcast applications
- Zone selection or all call
- PC-programmable system software permits desired functions to be assigned to individual function keys (equipped with 2 LED indicators)
- Up to 8 in total of RM-200X and RM-200XF units can be connected within one system

- RM-210: Key Extension Unit with 10 additional keys
- Up to 9 RM-210 Key Extension Units can be used with each RM-200X Remote Microphone

Options

- WB-RM200: Wall Mounting Bracket
- WH-4000A: Headset

Specifications

	RM-200X	**RM-210**
Applicable Model	VX-200XR in VX-2000, RM-210	RM-200M, RM-200X, RM-200XF, RM-200SA, RM-200SF
Power Source	24 VDC (operating range: 16 – 40 VDC), supplied from RJ45 connector or power input jack (non-polarity type)	From remote microphone
Current Consumption	Under 200 mA (RM-200X), 750 mA (with 9 RM-210s connected)	75 mA max. (in terms of DC power inputs of RM-200X)
Audio Output	0 dBV, 600 Ω, balanced, RJ45 connector	-
External Microphone Input	-40 dBV, 2.2 kΩ, unbalanced, mini jack, phantom powering	-
Frequency Response	100 Hz – 20 kHz	-
Distortion	Under 1 %	-
Signal-to-Noise Ratio	Over 60 dB	-
Internal Monitor Speaker	200 mW	-
Volume Control	Microphone volume control, Monitor speaker volume control	-
Key Extension	Max. 9 RM-210	10 keys, freely assignable
Communication	System: LONWORKS twisted pair free topology transceiver, Distance: max. 500 m (Free topology wiring)	-
Connection Cable and Connector	Category 5 STP cable, RJ45 connector way of dedicated cable	Connection with dedicated cable
Finish	ABS resin, bluish gray (PANTONE 538 or its equivalent)	
Dimensions (W x H x D)	190 x 76.5 x 215 mm (gooseneck microphone excluded)	110 x 76.5 x 215 mm
Weight	0.85 kg	0.35 kg

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VX-2000 Series / **Modules for VX-2000**

VX-200XI

Audio Input Module

Features

- Control input terminals
- Low-cut and high-cut filters
- Gain controls
- Connects e.g. to paging microphone or other sound source equipment with both audio and control outputs
- Audio input sensitivity -70 dB or -20 dB by internal switch

VX-200XR

Remote Microphone Input Module

Features

- Remote Microphone Input Module for RM-200X Remote Microphone or RM-200XF Fireman's Microphone

M-01F

Microphone Input Module

Features

- Phantom power
- Balanced, low impedance
- Filter: High pass, low pass
- Connector: XLR

U-01R / U-03R / U-01F / U-01S

Module Input

Features

- U-01R: Module Input (RCA connector)
- U-03R: Module Input (RCA connector)
- U-01F: Module Aux Input (XLR connector)
- U-01S: Module Input (Phoenix connector)

Specifications

	VX-200XI	VX-200XR	M-01F	U-03R / U-03R / U01F / U-01S
Power Source	Supplied from VX-2000			
Input Impedance	-		600 Ω, balanced	-
Current Consumption	Under 30 mA	Under 17 mA	9 mA	Under 8 mA
Frequency Range	-		25 Hz – 20 kHz	20 Hz – 20 kHz
Connectable Microphones	-	RM-200X and RM-200XF		-
Input Sensitivity	MIC: -70 to -42.5 dBV LINE: -20 to +7.5 dBV MIC or LINE with selector switch	-	-60 dBV	100 – 3,600 mV (adjustable)
Control Input	No-voltage make contact, open voltage: 17 V DC, short circuit current: Under 5 mA	-		
Finish	Panel: Aluminium, hairline		Front: Steel plate	
Dimensions (W x H x D)	35 x 78 x 88 mm			
Weight	70 g		110 g	Max. 75 g

VX-2000 Series / **Modules for VX-2000SF**

VX-200SZ

Impedance Monitoring

Features

- Impedance Detection Module for audio signal output
- Speaker line impedance detection
- Detection of speaker line short circuits, open circuits and ground fault

VX-200SZ-2

Dual circuit
Impedance Monitoring

Features

- Impedance Detection Module
- Similar to the VX-200SZ features
- 2 speaker outputs (A and B), broadcasts can be maintained even if 1 of the 2 outputs fails
- Failures indication by LED on the panel

VX-200SP

Return Loop Monitoring

Features

- Pilot Tone Detection Module
- Audio signal output module with speaker line pilot tone detection
- Detection of speaker line short circuits, open circuits and ground fault

VX-200SP-2

End of Line Monitoring

Features

- Consists of Pilot Tone Detection Module & End of Line Module
- Similar to the VX-200SP features
- Shielded cable must be used for the speaker line

VX-200SP-ANC

Return Loop Monitoring

Features

- Line surveillance by pilot tone with cable return
- Detection of speaker line short circuits, open circuits and ground fault
- Ambient noise controller for adjusting the output volume according to the ambient noise
- Additional audio input (Bal., -10/-20 dBV, 10 kΩ)
- Automatic switch-over to standby amplifier
- Attack time selectable (2 sec, 10 sec, 1 min)

Specifications

	VX-200SZ	VX-200SZ-2	VX-200SP	VX-200SP-2	VX-200SP-ANC
Power Source	Supplied from VX-2000SF				
Current Consumption	Under 150 mA	Under 170 mA	Under 100 mA		Under 130 mA
Power Amplifier Link	RJ45 female connector for connecting the VP-3154, VP-3304, VP-3504, VP-2064, VP-2122, VP-2241, VP-2421 Power Amplifier				
Line Monitor	-				Plug-in screw connector
External Attenuator	-				Plug-in screw connector, relay, no-voltage make contact output
Control Output	Transfer type, withstand voltage: 30 V DC, 250 V AC, contact current: under 7 A				
Speaker Output	Plug-in screw connector, AWG 24-22	2 outputs (A, B), plug-in screw connector, AWG 24-16	Plug-in screw connector, AWG 24-16		-
Power Amplifier Input	Plug-in screw connector for connecting the VP-3154, VP-3304, VP-3504, VP-2064, VP-2122, VP-2241, VP-2421 Power Amplifier				-
Fault Detection System	Short circuit, open circuit (pilot tone detection method), ground fault				
Volume Control Range	-				21 dB
Finish	Panel: Surface-treated steel plate				
Dimensions (W x H x D)	30.5 x 132.6 x 290.3 mm				
Weight	320 g	335 g	240 g	260 g (incl. end of line module)	520 g

VX-2000 Series / **Modules**

VX-200SE

Equalizer Card

Features

- 9-band, 1-channel equalizer
- To be mounted on the circuit board of the VX-200SP / VX-200SP-2 Pilot Tone Detection module or VX-200SZ / VX-200SZ-2 Impedance Detection module
- Settings are performed by using the PC system software
- Gain range: ±12 dB, adjustable in 2 dB steps
- Equalizer Centre Frequency: 80 Hz, 125 Hz, 250 Hz, 500 Hz, 1 kHz, 2 kHz, 4 kHz, 8 kHz, 12 kHz

EN 54 16

VX-200SO

Control Output Module

Features

- Increases the number of control outputs in the VX-2000 system
- 16 control outputs
- No-voltage, make contact to external equipment depending on the event
- Up to 128 control outputs per system

EN 54 16

VX-200SI

Control Input Module

Features

- Increases the number of control inputs
- 16 control inputs
- Receives a contact signal from connected external equipment and controls the system
- Up to 128 control inputs per system

EN 54 16

VP-200VX

Power Amplifier Input Module

Features

- For VP-2000 Amps
- For transmission of status and audio signal between amplifier and control module
- To be built into the VP-2064, VP-2122, VP-2241 or VP-2421 power amplifier

EN 54 16

VP-200VX-BGM

Power Amplifier Input Module

Features

- In comparison to VP-200VX the VP-200VX-BGM features additional BGM input plus muting

EN 54 16

EV-200M

Sound Repeater Module

Features

- For VX-2000
- Up to 8 messages, can be used for alert & evacuation, general messages or music
- Includes compact memory flash card
- Single source playback
- Distortion: under 0.3 % (44.1 kHz, recording method: extremely high)

EN 54 16

Specifications

	VX-200SE	VX-200SO	VX-200SI	VP-200VX	VP-200VX-BGM	EV-200M
Power Source	Supplied from VX-2000SZ, VX-200SP	Supplied from VX-2000SF		Supplied from amplifier (VP-2064, VP-2122, VP-2241 or VP-2421)		24 VDC
Current Consumption	Under 50 mA	Under 150 mA	Under 100 mA	Under 30 mA	Under 35 mA	0.2 A
Frequency Response	-			20 Hz – 20 kHz	20 Hz – 20 kHz (RJ45); 100 Hz – 20 kHz (program input)	20 Hz – 20 kHz (44.1 kHz sampling)
Control Output	-	16 outputs, no-voltage make contact, contact capacity: 28 VDC, 1 A, RJ45 connector	16 inputs, no-voltage make contact, open voltage: 24 VDC, short circuit current: under 10 mA, RJ45 connector	-		
Finish	-	Panel: Surface-treated steel plate				-
Dimensions (W x H x D)	110 x 90 x 21.4 mm	30.5 x 132.6 x 290.3 mm		88 x 25.8 x 53.2 mm		120 x 18.6 x 121 mm
Weight	0.05 kg	0.25 kg	0.2 kg	0.05 kg	0.06 kg	0.12 kg

VX-2000 Series / **Accessories**

DS-EC1

Control Interface for VX-2000DS

Features

- Can disable the (AC/DC) power failure information to VM-3000, VX-2000 and SX-2000 by activating its control input DIS so that the VA system stays in normal mode even during battery backup
- The failure information is available at the separate control output EXT.F., so that the failure can be indicated by the function "external failure" via the failure receipt function
- Can be mounted on DIN-rails

ATT-100VI

Attenuator Board

Features

- Designed to transform a 100 volt signal from a power amplifier's speaker output to line level
- The line level output is isolated from the 100 volt input and can be connected to line level inputs of power amplifiers and other devices
- Designed for a attenuation ratio of 100 : 1.26, then the output signal is 2 dB above 0 dBV, i.e. 1.26 volt
- Can be mounted on DIN rails

VX-RJB QJ

RJ45 - Screw Terminal Adapter

Features

- Designed to make each pin of an RJ45-connector available on screw terminals for connecting installation cables with a cross section area from 0.5 mm² up to 2.5 mm²
- A separate terminal is provided for powering remote microphones from an external power source (VX-2000DS, VX-3000DS and VX-3150DS) instead of powering from the RJ45 connector
- The power from the external source is fused, interrupting the power when the current to the remote microphone exceeds 1.1A
- Can be mounted on DIN rails

RC-2144

Modem

Features

- Modem for remote maintenance or transmission of alarm and system data
- Up and leased line capability
- Analog, on request: ISDN, DECT, GSM
- Can be mounted on DIN rails

RK-8VXA

Relay Board

Features

- With low-drop voltage regulator to secure safe operation also during battery backup
- Provides a further fused 24VDC output for external equipment
- Overheat protection is provided
- Can be used for zone selection, control of external high current devices and other
- Can be mounted on DIN rails and can be cut at certain lines to obtain single devices.

SOB-1

Switch-Over-Box

Features

- Can be used to switch over a local PA to a central PA system or to supply a line level signal into a local PA amplifier with priority
- 4 switch over contacts are available for priority control and switching over speakers
- Low impedance speaker can be connected to a 100 volts line via a build-in 5 watts transformer

VSX-2000OP-SW
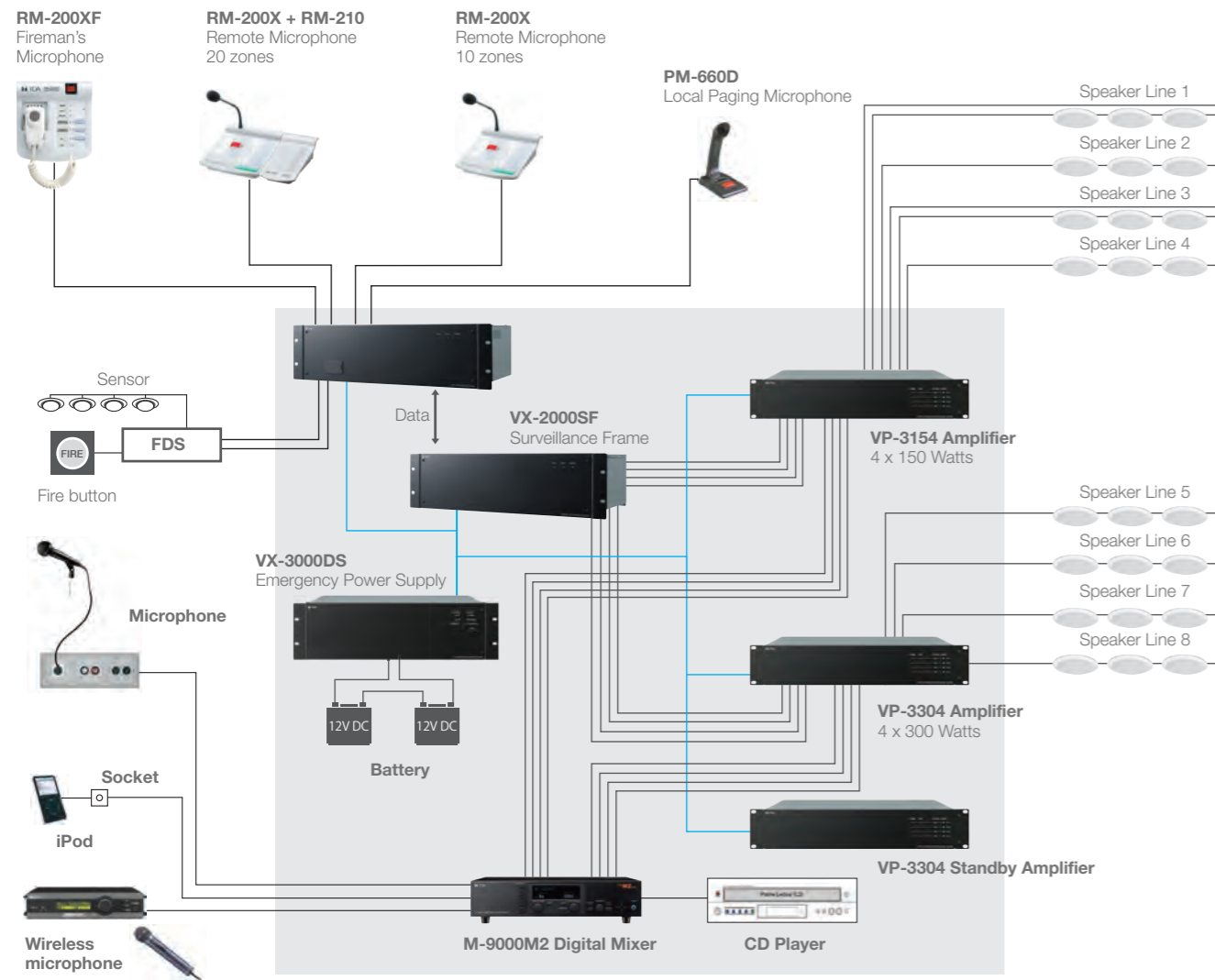
VX-SX Operation Software Kit

Features

- Designed for operating the VX-2000 or SX-2000 system from PC via a graphical user interface (GUI)
- Scheduling broadcasts for different events to a defined time
- Visualizing the operational status of the connected system components, system mode and faults
- Extracting and indicating the log entries online
- Importing project designs from an image format and editing the layout according to the speaker and fire zones, remote microphones, contacts in/outputs
- Broadcasting audio signal between the connected PCs running the software and sharing the same network (Internal Audio Streaming)

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VX-2000 Series / **System Configuration**

RM-200XF
Fireman's Microphone

RM-200X + RM-210
Remote Microphone
20 zones

RM-200X
Remote Microphone
10 zones

PM-660D
Local Paging Microphone

Speaker Line 1
Speaker Line 2
Speaker Line 3
Speaker Line 4

Sensor

Data

VX-2000SF
Surveillance Frame

VP-3154 Amplifier
4 x 150 Watts

FDS

Fire button

Speaker Line 5
Speaker Line 6
Speaker Line 7
Speaker Line 8

VX-3000DS
Emergency Power Supply

Microphone

12V DC   12V DC

Battery

VP-3304 Amplifier
4 x 300 Watts

Socket

iPod

VP-3304 Standby Amplifier

Wireless microphone

M-9000M2 Digital Mixer   **CD Player**

Automatic Dual Broadcasting

When activated by a remote microphone or fire detection system link, simultaneous dual broadcasting is possible by using 2 voice announcement cards to allow different messages* to be available at the same time such as alert and evacuation messages.

4F
3F
2F
1F
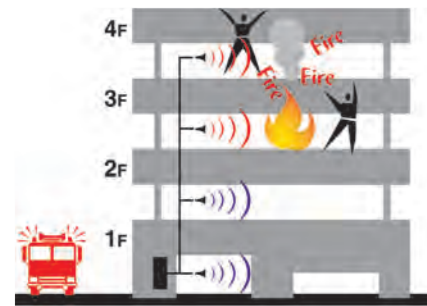
*A maximum of 2 broadcasts are simultaneously possible.
(2 EV-200M voice announcement boards installed in the VX-2000)

Red

In an emergency, the system automatically broadcasts one evacuation message to the buildings 3rd and 4th floors.

Blue

Along with the evacuation message, the system automatically broadcasts an alert message to the 1st and 2nd floors simultaneously.

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Voice Alarm Systems / **Overview Remote Microphones**

System	Remote Microphone	Key Extension Unit	Max. Key Extension Units per Remote Microphone	General broadcast	Emergency broadcast
VX-3000 Series	RM-300X	RM-210F	7	•	•
	RM-200SF	RM-320F	4	•	-
VM-3000 Series	RM-200M	RM-210	4	•	-
	RM-300MF	RM-320F	3	-	•
VX-2000 Series	RM-200X	RM-210	9	•	•
	RM-200XF	RM-210 RM-320F	10 5	• •	• •
SX-2000 Series	RM-200SA	RM-210	4	•	•
	RM-200SF	RM-210 RM-320F	5 2	• •	- -
	N-8610RM	RM-210	4	•	-

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01 VOICE ALARM SYSTEMS /

SX-2000 Series

Network enabled system ideal for installations in large building complexes.

The SX-2000 is a scalable system for configuring versatile and highly effective PA systems. The system features new matrix capabilities, so that a single system can have its components distributed in different locations under centralized control.

Ideal for large scale installations ranging from multiple buildings to local systems, the versatile SX-2000 Series is particularly suitable for using in airports and railway stations, factories, shopping malls and large offices. The system's versatility such as dual power source and redundancy for fail-safe operation makes it a reliable solution for any specific installation without long lead times and the expense of custom systems.

Certificate No: 1134-CPR-102

Maximum System Capacity	
Output Power	128,000 W
Speaker Zones	256
Remote Mic connection	64

Features

- Network-base sound system
- Max. 64 audio inputs and 256 outputs with 16 bus lines
- Max. 1,416 control inputs and outputs for system integration
- Built-in DSP function, event logger and surveillance of amplifiers and speaker lines

- Max 1,536 zones in combination with VM-3000
- Max 2,048 zones in combination with TOA's N-8000 series IP Intercom System
- Usable with Managed Ethernet Switches: IES-3000 Series (please see page 34)

Applications

- Airports
- Railway stations
- Factories
- Shopping malls
- Large offices

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SX-2000 Series / System Manager / **SX-2000SM**
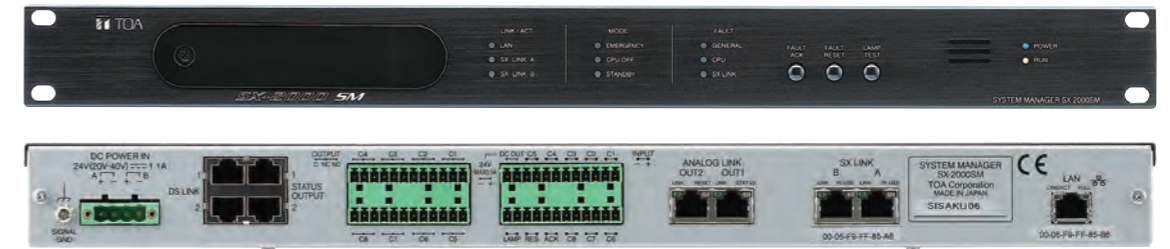
Features

- Matrix system in combination with an audio input unit, audio output unit and remote microphone
- Audio signal routing and priority control
- 8 control inputs, 8 control outputs
- Failure status outputs, failure data inputs/switches
- Access indicators, mode indicators and failure indicators enabling a wide range of controls and status monitoring

- Control can be performed by way of a CF card inserted into the SX-2000SM unit
- Operations can be recorded and their contents stored on a CF card as an operation log
- Two power inputs for creation of a dual-redundant power system
- Automatic voice announcement for emergency purpose available
- System settings via Dual LAN connection

Options

- SX-2000AO: Audio Output Unit
- SX-2100AI: Audio Input Unit
- SX-2100AO: Audio Output Unit
- VSX-2000OP-SW: VX-SX Operation Software Kit

Specifications

	SX-2000SM
Applicable Model	VX-2000DS, VX-3000DS
Power Source	24 V DC; 2 power inputs
Current Consumption	Under 0.8 A
SX Link Network I/F	2 x 100 Base-TX circuits
LAN	Network I/F 1 10 BASE-T/100 BASE-TX circuit. Network Protocol TCP/IP. Connection Cable Shielded Category 5 twisted pair cable for LAN (CAT5-STP)
Analog Link	Input/output connector output: 2, connection cable shielded category 5 twisted pair cable for LAN (CAT5-STP)
Failure Data	3 inputs (ACK/RESET/LAMP TEST) and 4 outputs (CPU FAULT/GENERAL FAULT/CPU OFF/BUZZER)
Memory Card	Insertion slot: 1 (supplied CF card (128 MB))
Control	8 control outputs, 8 control inputs
Finish	Panel: Aluminum, black, alumite / Case: Surface-treated steel plate
Dimensions (W x H x D)	482 x 44 x 333 mm (19", 1U)
Weight	3.8 kg

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SX-2000 Series / Audio Input Unit / **SX-2100AI**

Features

- Modular audio input
- 2 to 8 audio inputs per unit
- Multiple units can be decentralized in a whole system
- Audio signals are transmitted digitally to the audio output unit
- Audio input levels (post-fader levels) are indicated on the level meters provided for each input channel

- Volumes can be adjusted for each channel using the volume controls on the front panel or the SX-2000 software
- Volume controls can be locked using the SX-2000 software
- Input channels can be monitored using the internal speaker
- 2 power inputs for redundant power system to support a dual-redundant power supply system

Options

- SX-200RM: Remote Microphone Interface Module
- SX-200IP: IP Interface Module
- D-921E: Mic/Line Input Module
- D-921F: Mic/Line Input Module
- D-922E: Mic/Line Input Module
- D-922F: Mic/Line Input Module
- D-936R: Stereo Select Input Module
- N-8610RM: IP Remote Microphone
- RM-200SF: Remote Microphone
- RM-200SA: Remote Microphone
- RM-210: Key Extension Unit
- RM-320F: Key Extension Unit

Specifications

	SX-2100AI
Applicable Model	VX-2000DS, VX-3000DS
Power Source	24 VDC (2 independent power inputs)
Current Consumption	Under 1.5 A (when operated on 24 VDC)
Audio Inputs	8 inputs, for up to 4 modules
Audio Input Characteristics	Sampling frequency: 48 kHz
Analog Link Input / Output Connector Connection Cable / Device	1 input, 1 output, CAT5-STP, max. cable length 800 m, 2 x RJ45 connector
SX Link Network I/F Connection Cable / Device	2 x 100 Base-TX circuits CAT5-STP, maximum cable length 100 m to hub
Finish	Panel: Aluminum, black, alumite / Case: Surface-treated steel plate
Dimensions (W x H x D)	482 x 88.4 x 349 mm (19", 2U)
Weight	7 kg

SX-2000 Series / **Input Modules for SX-2100AI**

SX-200RM
Remote Microphone Interface Module

Features
- Can be used to connect two remote microphones
- Input sensitivity can be adjusted
- 2 x RJ45 connector for remote microphones
- A/D Converter: 24 bits

SX-200IP
IP Interface Module

Features
- RJ45 connectors
- Enable paging announcement from the N-8000 Series stations (N-8600MS and N-8610RM) to the SX-2000 System

D-921E
Mic/Line Input Module (24 bits monaural type)

Features
- 2-channel microphone/line input module
- Equipped with removable terminal block type connectors

D-921F
Mic/Line Input Module (24 bits monaural type)

Features
- 2-channel microphone/line input module
- Equipped with XLR connectors

D-922E
Mic/Line Input Module (20 bits monaural type)

Features
- 2-channel microphone/line input module
- Equipped with removable terminal block type connectors

D-922F
Mic/Line Input Module (20 bits monaural type)

Features
- 2-channel microphone/line input module
- Equipped with XLR connectors

D-936R
Stereo Select Input Module

Features
- 4 stereo input module
- Equipped with standard RCA pin jacks

Specifications

	SX-200RM	SX-200IP
Power Source	Supplied from SX-2100AI	-
Frequency Response	20 Hz – 20 kHz, ± 1 dB	-
Sampling Frequency	48 kHz	-
Dynamic Range	> 100 dB (IHF-A weighted)	-
Distortion	< 0.05 %	-
Finish	Panel: Pre-coated steel plate, black, 30 % gloss	
Network Section	-	Network I/F: 10BASE-T/100BASE-TX (Automatic-Negotiation) Network Protocol: TCP/IP, UDP, HTTP, RTP, ARP, ICMP, IGMP Voice sampling frequency: 16 kHz, 8 kHz (controllable on the software) Voice packet loss recovery: Silence insertion Audio delay time: 80 ms, 320 ms (controllable on the software)
Indicator	-	Operation indicator (RUN)
Dimensions (W x H x D)	35 x 119.5 x 178.4 mm	
Weight	190 g	150 g

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SX-2000 Series / Audio Output Unit / **SX-2000AO**

Features

- Units can be operated in a decentralized system
- 8 audio outputs and 2 inputs, can be mixed
- 8 control inputs and 8 control outputs
- Receives audio signals from the Audio Input Unit via digital transmission
- Analog audio input function (1 channel) enables simultaneous all-zone calls for use in emergency situations
- Audio output levels (post-fader levels) indicated on the level meters separate for each output channel
- Volumes adjustable for each channel by front volume controls or the SX-2000 software
- The volume controls can be locked by SX-2000 software
- Any output channel can be monitored using the internal speaker
- Emergency audio input and 24 V emergency cut-off input
- 2 power inputs for dual-redundant power supply system
- For public address applications

Options

- SX-2000CI: Control Input Unit
- SX-2000CO: Control Output Unit
- DA-250DH: Digital 2 Channel Amplifier 100 V
- DA-250FH: Digital 4 Channel Amplifier 100 V
- DA-550FH: Digital 4 Channel Amplifier 100 V
- DA-250D: Digital 2 Channel Amplifier 4/8 Ω
- DA-250F: Digital 4 Channel Amplifier 4/8 Ω
- DA-550F: Digital 4 Channel Amplifier 4/8 Ω

Specifications

	SX-2000AO
Applicable Model	VX-2000DS, VX-3000DS
Power Source	24 V DC (operating range: 20 – 40 V DC from VX-200PS)
Current Consumption	Under 0.79 A
Audio Output	8 outputs, 0 dBV, load: 600 Ω or more
Audio Output Characteristics	Frequency Response: 20 Hz – 20 kHz , sampling frequency 48 kHz, D/A converter 24 bit
Control Input / Control Output	8 inputs / 8 outputs, removable terminal blocks (6 pins)
Emergency Line Input	Emergency signals switched and sent to input 1 (H,C,E) by relay, removable terminal blocks (3 pins)
Emergency-Cutoff 24 V Input	1 input, input current < 5 mA, removable terminal block (2 pins)
Analog Link	1 input, 1 output, connection cable CAT5-STP, max. cable length 800 m, 2 x RJ45 connector
SX Link	2 x 100 Base-TX circuits with RJ 45 connector. Connection cable CAT5-STP, maximum cable length of 100 m to hub
Finish	Panel: Aluminum, black, alumite / Case: Surface-treated steel plate
Dimensions (W x H x D)	482 x 88.4 x 349 mm (19", 2U)
Weight	6.2 kg

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SX-2000 Series / Audio Output Unit / **SX-2100AO**

Features

- Multiple units can be decentralized in a system
- 8 audio outputs
- 8 control inputs and 8 control outputs
- 1 SX-2000CI Control Input Unit and 1 SX-2000CO Control Output Unit each can be cascaded
- 2 local audio inputs with control inputs are provided for the audio inputs
- Emergency switch over to a standby amplifier
- Analog transmission path (1 channel) enables all-zone calls for use in emergency situations
- 2 channels of link connection terminals for connecting to two VX-2000DS or VX-3000DS
- 2 inputs can be mixed and output
- 2 power inputs for redundant power supply
- Level meters for each output channel allow monitoring of audio output levels
- Output volumes adjustable on the front panel
- Any output channel can be monitored using the internal speaker
- Key lock function
- Automatic control of stand-by amplifier

Options

- SX-2000CI: Control Input Unit
- SX-2000CO: Control Output Unit
- VP-3154: 150 W by 4 channels amplifier
- VP-3304: 300 W by 4 channels amplifier
- VP-3504: 500 W by 4 channels amplifier
- VP-2064: 60 W by 4 channels amplifier
- VP-2122: 120 W by 2 channels amplifier
- VP-2241: 240 W by 1 channel amplifier
- VP-2421: 420 W by 1 channel amplifier

Specifications

	SX-2100AO
Applicable Model	VX-2000DS, VX-3000DS
Power Source	24 V DC (2 power inputs)
Current Consumption	Under 1.2 A
Audio Output	8 outputs, 0 dBV, load: 600 Ω or more
Audio Output Characteristics	Frequency Response: 20 Hz – 20 kHz , sampling frequency 48 kHz, D/A converter 24 bit
CI/CO Link	SX-2000CI / SX-2000CO: 1 interface, connection cable CAT5-STP, RJ45 connector
Local Audio Input	2 audio inputs, 0 dBV, 10 kΩ, electronically balanced, RJ45 connector Frequency Response: 20 Hz – 20 kHz, sampling frequency 48 kHz, D/A converter 24 bit 2 Control inputs Connection cable CAT5-STP,
DS Link	VX-2000DS, VX-3000DS: 2 interfaces, connection cable CAT5-STP, RJ45 connector, VX-3000DS
Analog Link	1 input, 1 output, connection cable CAT5-STP, RJ45 connector
SX Link	2 x 100 Base-TX with RJ 45 connector, connection cable CAT5-STP
Finish	Panel: Aluminum, black, alumite / Case: Surface-treated steel plate
Dimensions (W x H x D)	482 x 88.4 x 349 mm (19", 2U)
Weight	7.1 kg

SX-2000 Series / Control Input Unit / **SX-2000CI**
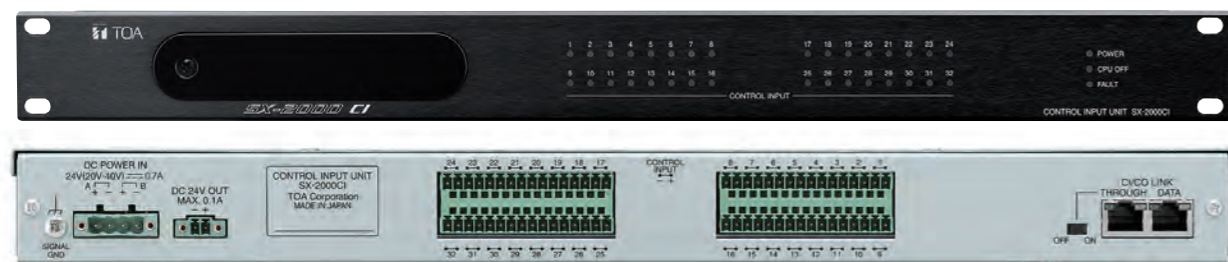
Features

- 32 control inputs
- Control input line failure detection
- Front panel LED for monitoring the line status
- Supply of stabilized 24 V DC
- 2 independent power inputs
- Decentralised installation of multiple units possible
- RJ45 connectors

Options

- SX-2100AO: Audio Output Unit
- SX-2000AO: Audio Output Unit

Specifications

	SX-2000CI
Applicable Model	VX-2000DS, VX-3000DS
Power Source	24 V DC, 2 independent inputs
Current Consumption	Under 0.55 A (when operated on 24 V DC)
Control Inputs	32 inputs
Input/Output Connector	Input: 1, Output: 1; RJ45 connector
Connection Cable	Shielded category 5 twisted pair cable (CAT5-STP)
Maximum Cable Distance	800 m
Output Voltage	24 V DC ±10 % or less
Maximum Feeding Current	100 mA
Connector	Removable terminal block (2 pins)
Finish	Panel: Aluminum, black, alumite / Case: Surface-treated steel plate
Dimensions (W x H x D)	482 x 44 x 331.5 mm (19", 1U)
Weight	3.6 kg

SX-2000 Series / Control Output Unit / **SX-2000CO**

Features

- 32 control outputs
- Front panel LED for monitoring the line status
- Supply of stabilized 24 V DC
- 2 independent power inputs
- Decentralised installation of multiple units possible
- RJ45 connectors

Options

- SX-2100AO: Audio Output Unit
- SX-2000AO: Audio Output Unit

Specifications

	SX-2000CO
Applicable Model	VX-2000DS, VX-3000DS
Power Source	24 V DC, 2 independent inputs
Current Consumption	Under 0.29 A (when operated on 24 V DC)
Control Outputs	32 outputs, max. 40 V DC, 2 – 300 mA
Input/Output Connector	Input: 1, Output: 1, RJ45 connector
Connection Cable	Shielded category 5 twisted pair cable (CAT5-STP)
Maximum Cable Distance	800 m
Finish	Panel: Aluminum, black, alumite / Case: Surface-treated steel plate
Dimensions (W x H x D)	482 x 44 x 331.5 mm (19", 1U)
Weight	3.6 kg

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SX-2000 Series / Emergency Remote Microphone & Terminal Unit / **RM-200SF / RM-200RJ**

EN 54 16

RM-200SF

RM-200RJ

RM-200SF

- For emergency broadcast
- For activation of emergency mode, start and stop automatic broadcasts of emergency announcements, reset emergency signals, and live microphone announcements
- CPU-switch for emergency broadcast to all zones even in case of a CPU error
- Up to 4 Key Extension Units per Emergency Remote Microphone

Options

- RM-320F: Key Extension Unit
- RM-210: Key Extension Unit
- WB-RM200: Wall Mounting Bracket

RM-200RJ

- Convert the RJ45 connector into a screw terminal block
- Used to connect between a trunk cable (such as CPEV cable) and a feeder cable (such as CAT-5 or CAT-6 cable) in wiring a remote microphone
- Built-in indicator shows the voltage status of DC power cable when the remote microphone cable for the SX-2000 series system is connected

Specifications

	RM-200SF	RM-200RJ
Applicable Model	SX-200RM in SX-2100A, VX-3004F, VX-3008F, VX-3016F, RM-210, RM-320F	SX-2100AI, RM-200SA, RM-200SF
Power Source	24 V DC (operating range: 15 – 40 V DC)	-
Applied Voltage / Withstand Voltage	-	Under 40 V / 1 A
Distortion	Under 1 %	-
Frequency Response	200 Hz – 15 kHz	-
Signal-to-Noise Ratio	Over 55 dB	-
Audio Output	0 dBV, 600 Ω, balanced	-
Microphone	Unidirectional dynamic microphone AGC	-
Volume Control	Microphone, speaker	-
Key Extension	Max. 4 RM-320F	-
Voltage Indicator	-	Monitor terminals: terminal No 7 (+) and terminal No 8 (–), extinguish voltage: 14 V or less, lighting voltage: 21 V or more, indicator ON/OFF switchable
Connector / Terminal	-	RJ45 connector: 1 / M3 screw terminal (10 pins), distance between barriers: 6.62 mm
Finish	ABS resin, bluish gray (PANTONE 538 or its equivalent)	Surface-treated steel plate, black, paint
Dimensions (W x H x D)	200 x 215 x 95 mm	84 x 116 x 25.7 mm
Weight	1.48 kg	250 g

SX-2000 Series / Remote Microphone / **RM-200SA / RM-210**

EN 54 16

RM-200SA/RM-210

RM-210

RM-200SA

- 13 function switches
- Zone, group, all-call paging, and activate pre-recorded messages
- Emergency sequence can be started with the alarm button which is covered by a hinged lid
- Indication of system failure, line failure, busy zones, etc.

- Extraordinary clarity and freedom from distortion by built-in compression circuit
- Up to 64 remote microphones can be connected
- Covered switch prevents against accidental use
- RM-210: Key Extension Unit

Options

- WH-4000A: Headset
- WB-RM200: Wall Mounting Bracket

Specifications

	RM-200SA	RM-210
Applicable Model	SX-200RM in SX-2100AI, RM-210	RM-200M, RM-200X, RM-200XF, RM-200SA, RM-200SF
Power Requirement	24 V DC (operating range: 15 – 40 V DC)	From remote microphone
Current Consumption	240 mA max.	80 mA max. (in terms of DC power inputs of RM-200SA)
Distortion	Under 1 %	-
Frequency Response	100 Hz – 20 kHz	-
Signal-to-Noise Ratio	Over 60 dB	-
Audio Output	0 dBV, 600 Ω, balanced	-
Microphone	Unidirectional electret condenser microphone	-
Volume Control	Microphone, buzzer, monitor speaker	-
Emergency Broadcast	Activation of emergency broadcast (pre-recorded announcement or live microphone announcement) by emergency broadcast switch	-
Key Extension	Max. 4 RM-210	10 keys, freely assignable
Connection Cable and Connector	Category 5 STP cable, RJ45 connector; Cable length up to 800 m	Connection by way of dedicated cable
Finish	ABS resin, bluish gray (PANTONE 538 or its equivalent)	ABS resin, bluish gray (PANTONE 538 or its equivalent)
Dimensions (W x H x D)	190 x 76.5 x 215 mm (Gooseneck microphone excluded)	110 x 76.5 x 215 mm
Weight	880 g	350 g

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SX-2000 Series / IP Remote Microphone / **N-8610RM**

EN 54 16

Features

- Connection via LAN or switching hub and SX-200IP
- Can make a paging call to any selected zone(s) of SX-2000 System
- Two way communication capability with other stations in N-8000 Intercom System
- 14 function keys

- Up to 4 RM-210 Key Extension Units can be connected
- Powered by PoE-compatible switching hub or optional AC adapter

Options

- RM-210: Key Extension Unit
- WB-RM200: Wall Mounting Bracket
- AD-1210P: AC Adapter
- SX-200IP: IP Interface Module

Specifications

	N-8610RM
Applicable Model	SX-200IP in SX-2100AI
Power Source	Power supply device that complies with IEEE802.3af standard or 12 V DC (supplied from the AC adapter (option))
Power Consumption	4 W (Use of the AC adapter, 12 V DC), 8.5 W (when connecting 4 RM-210 Key Extension Units) 5.2 W (Use of the PoE, 48 V DC), 7.5 W (when connecting 4 RM-210 Key Extension Units)
Key Extension	Max. 4 RM-210 (maximum 2 units at PoE power supply)
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
Voice Packet Loss Recovery	Silence insertion
Audio Delay Time	80 ms, 320 ms (controllable on the software)
Finish	ABS resin, bluish gray (PANTONE 538 or its equivalent)
Dimensions (W x H x D)	190 x 76.5 x 215 mm (excluding microphone)
Weight	0.7 kg

SX-2000 Series / **System Configuration**

Integration of SX-2000 with N-8000 IP Intercom strengthens system capabilities.
A large system with up to 2048 zones is realized on the IP Network. From a remote location, IP Station (N-8610RM and N-8600MS can make a paging call to any selected zone(s).

Example: Distributed Factory Application

Factory in Japan
Factory in China
WAN
LAN
LAN
Paging (1 way)
2 way communication
N-8000
SX-2000
N-8000
SX-2000

N-8000 IP Intercom System

SX-2000 System #1
Fire alarm
Failure indication
SX-2000CI
SX-2000CO
SX-2000SM
SW-HUB
SX-2100AI
SX-2100AO
SX-200IP
VP-3304
RM-200SA
VP-3304
RM-200SA
DC power
Standby amplifier (VP-3304)
Auto Announcement Machines
VX-3000DS
BGM
Lead-acid Battery
Max. 2048 zones

2 way communication
N-8610RM
LAN

— LAN
--- SX LINK* (100Base/T)
— RM LINK (DC power, Audio, Data)
— PA LINK (Audio, Data)
— CI/CO Link
* Make the SX Link terminals completely independent from other LAN.

SX-2000 System #8
SX-2000SM
SW-HUB
SX-2100AI
SX-2100AO

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01 VOICE ALARM SYSTEMS /

EN 54 Certified Speakers

Extensive range of certified speakers for a big variety of applications.

In many buildings a voice evacuation system according to EN 54 is mandatory. For this purpose our certified speakers shall be used. All speakers marked with the below icons passed comprehensive tests resulting in a certificate of an independant notified testing institution.

Our extensive range of certified speakers include:

- Ceiling Speakers
- Box Speakers
- Horn Speakers
- Projection Speakers
- Design Speakers
- Compact Array Speakers

This icon indicates that the speaker is EN 54-24 certified and is therefore legalised for use in conjunction with fire detection systems.

This icon indicates that the speaker is fully compliant to the BS5839 part 8 code of practice.

This icon indicates that the speaker complies by the Ingress Protection standard (IP). These icons will help show how the speaker can perform within different types of weather conditions.

This icon indicates that ease data is available for this speaker.

EN 54 Certified Speakers / Ceiling Speakers / PC-1867FC / PC-1869EN / PC-2369EN
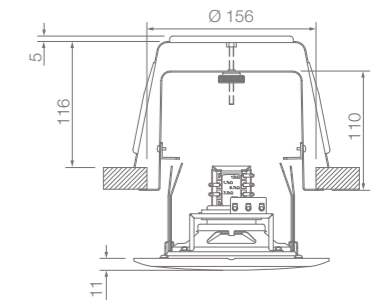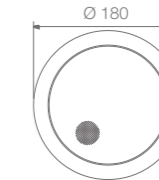
PC-1867FC

PC-1869EN / PC-2369EN
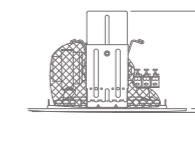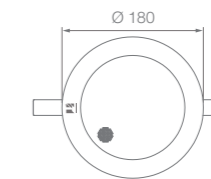
PC-1869EN
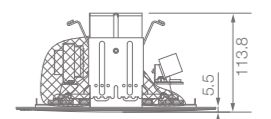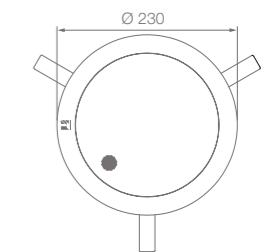
PC-2369EN

PC-1867FC

- 9 W continuous program
- Fire dome made of steel
- Easy installation with spring catches
- 12 cm speaker
- For mounting in 156 mm holes

PC-1869EN / PC-2369EN

- Flat front panel
- Quick and easy installation
- For mounting in 75 mm depth (PC-1869EN) or 110 mm depth (PC-2369EN)
- Ceramic screw terminal block and thermal fuse

Applications

- Public buildings
- Supermarkets
- Office towers
- Hotels
- Health clubs

Specifications

	PC-1867FC	PC-1869EN	PC-2369EN
Rated Input	6 W (100V), 3 W (70V)		
Tappings	6 / 3 / 1.5 / 0.8 W (100V), 3 / 1.5 / 0.8 / 0.4 W (70V)		
Sensitivity (1 W, 1 m)	90 dB	94 dB	
Frequency Response	160 Hz – 13 kHz	100 Hz – 18 kHz	70 Hz – 18 kHz
Mounting Hole Diameter	156 mm ±3 mm	150 mm ±3 mm	200 mm ±3 mm
Speaker Component	5" cone-type		6" cone-type
Connection	Ceramic screw terminals, thermal fuse		
Colour	Traffic white (RAL 9016 or equivalent colour)		
Dimensions (ø x D)	180 x 121 mm	180 × 77.5 mm	230 × 113.8 mm
Weight	1.4 kg	0.82 kg	1.1 kg
EN 54-24 Certificate No	1438/CPD/0183	0359-CPD-0100	0359-CPD-0101

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EN 54 Certified Speakers / Ceiling Speakers / **PC-245AB-EB / PC-275AB-EB**

Ø 245

131

15

PC-245AB-EB

Ø 274.4

86.5

PC-275AB-EB

PC-245AB-EB

- A/B wiring
- Firedome prevents passing the flames into the ceiling
- 2 separate 100 V transformer and 2 x 6 W speaker
- Easy installation

PC-275AB-EB

- A/B wiring
- Only 86 mm depth
- 2 separate 100 V transformer and 2 x 6 W speaker
- Quick-mount

Applications

- Public buildings
- Traffic terminals
- Supermarkets
- Office towers
- Hotels
- Health clubs

Specifications

	PC-245AB-EB	PC-275AB-EB
Rated Input	2 x 6 W (100 V)	
Tappings	6 / 3 / 1.5 W (100 V)	
Sensitivity (1 W, 1 m)	91 dB	92 dB
Frequency Response	150 Hz – 20 kHz (-10 dB from sensitivity)	180 Hz – 20 kHz (-10 dB from sensitivity)
Mounting Hole Diameter	220 mm	Depending on back box
Speaker Component	2 x 5" full range dual cone (A/B 2-lines)	2 x 6" full range, dual cone (A/B 2-lines)
Connection	2 ceramic screw terminals, thermal fuse	
Colour	Off-white (RAL 9010 or equivalent colour)	
Dimensions (ø x D)	245 × 131 mm	274.4 × 86.5 mm
Weight	2.05 kg	1.49 kg
EN 54-24 Certificate No	1488-CPD-0335/W	1488-CPD-0337/W

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EN 54 Certified Speakers / Box Speakers / **BS-250AB-EB**

254.5

204.5

BS-250AB-EB

- A/B wiring
- For indoor applications
- 2 separate 100 V transformer and 2 x 6 W speaker
- Wide temperature range of -10 °C to +55 °C
- Fire resistant according to UL 94-V0

Applications

- Public buildings
- Traffic terminals
- Supermarkets
- Office towers
- Hotels
- Health clubs

Specifications

	BS-250AB-EB
Rated Input	2 x 6 W (100 V Line)
Tappings	2 x 6 / 3 / 1.5 W (100 V), 2 x 3 / 1.5 / 0.8 W (70 V)
Sensitivity (1 W, 1 m)	89 dB
Frequency Response	150 Hz – 20 kHz
Mounting Hole Diameter	220 mm
Speaker Component	2 x 4" full range dual cone (A/B 2-lines)
Connection	Ceramic screw terminals, thermal fuse
Colour	Off-white (RAL 9010 or equivalent colour)
Dimensions (W x H x D)	254.5 x 204.5 x 87.5 mm
Weight	1.75 kg
EN 54-24 Certificate No	1488-CPD-0336/W

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EN 54 Certified Speakers / Box Speakers / **BS-678BSB / BS-678BSW**

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BS-678BSB

BS-678BSW

250

190
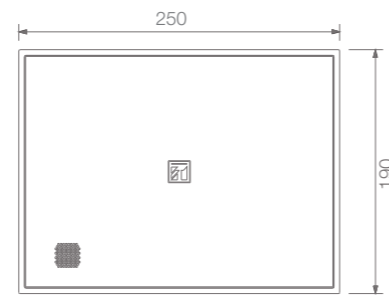
Features

- Stylish, compact and unobtrusive design
- Quick and easy wall-mount installation
- Cost-effective
- Horizontal and vertical mounting
- Easy impedance selection
- Bridge wiring possible

Applications

- Universal use – especially if a future expansion of the system is expected

Specifications

	BS-678BSB	BS-678BSW
Rated Input	6 W (100 V)	
Tappings	6 / 3 / 1.5 / 0.8 W (100 V), 3 / 1.5 / 0.8 / 0.4 W (70 V)	
Sensitivity (1 W, 1 m)	94 dB	
Frequency Response	150 Hz – 18 kHz	
Speaker Component	6" cone-type	
Connection	Ceramic screw terminals, thermal fuse	
Colour	Black (RAL 9011 or equivalent colour)	White (RAL 9010 or equivalent colour)
Dimensions (W x H x D)	250 × 190 × 110 mm	
Weight	1.7 kg	
EN 54-24 Certificate No	0359-CPD-0103	

EN 54 Certified Speakers / Box Speakers / **BS-680FC**

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094–145 SPEAKERS
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310

190
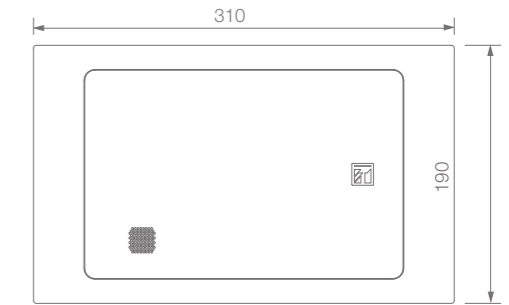
Features

- Surface or flush-mounting
- High sound quality & sound pressure
- Bridge wiring possible

Applications

- Universal use – especially if a future expansion of the system is expected

Specifications

	BS-680FC
Rated Input	6 W (100 V), 3 W (70 V)
Tappings	6 / 3 / 1.5 / 0.8 W (100 V), 3 / 1.5 / 0.8 / 0.4 W (70 V)
Sensitivity (1 W, 1 m)	94 dB
Frequency Response	150 Hz – 20 kHz
Speaker Component	6" double cone-type
Connection	Ceramic screw terminals, thermal fuse
Colour	Off-white (RAL 9010 or equivalent colour)
Dimensions (W x H x D)	310 x 190 x 90 mm
Weight	2.6 kg
EN 54-24 Certificate No	1438/CPD/0178

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EN 54 Certified Speakers / Box Speakers / **BS-1015BSB / BS-1015BSW / BS-1034EN**

BS-1015BSB   BS-1015BSW

290
196   186

BS-1034EN

210   80
330

BS-1015BSB / BS-1015BSW

- 2-way hi-fi speaker
- Easy and quick installation
- Fits architecturally sophisticated environments
- Options: SP-410: Wall/Ceiling Mounting Bracket, SP-420: Flush Mounting Frame, ST-16A: Speaker Stand

BS-1034EN

- Easy and quick installation
- Attractive design based on the Golden Ratio
- Input impedance selector with rotary switch
- Fire resistant according to UL 94-V0
- Fits architecturally sophisticated environments

Applications

- Public buildings
- Traffic terminals
- Supermarkets
- Office towers
- Hotels
- Health clubs

Specifications

	BS-1015BSB	BS-1015BSW	BS-1034EN
Rated Input	15W (100V), 7.5W (70V)		10W (100V), 10W (70V)
Tappings	15 / 10 / 5W (100V), 7.5 / 5 / 2.5W (70V)		10 / 5 / 3 / 1W (100V), 10 / 5 / 2.5 / 1.5 / 0.5W (70V)
Sensitivity (1W, 1m)	90dB		89dB
Frequency Response	80Hz – 20kHz		120Hz – 20kHz
Speaker Component	Low: 5" cone-type High balanced dome tweeter		
Connection	Ceramic screw terminals, thermal fuse		Ceramic screw terminals, thermal fuse, mounting bracket includes screw terminal
Colour	Black (RAL 9011 or equivalent colour)	White (RAL 9010 or equivalent colour)	
Dimensions (W x H x D)	196 × 290 × 186mm		210 × 330 × 80mm
Weight	2.4kg		1.4kg
EN 54-24 Certificate No	0359-CPD-0104		0359-CPD-0102

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EN 54 Certified Speakers / Horn Speakers / **SC-615BS / SC-630M EB-Q**

172   229
126   104.5
130   133   195

SC-615BS

285   277
227
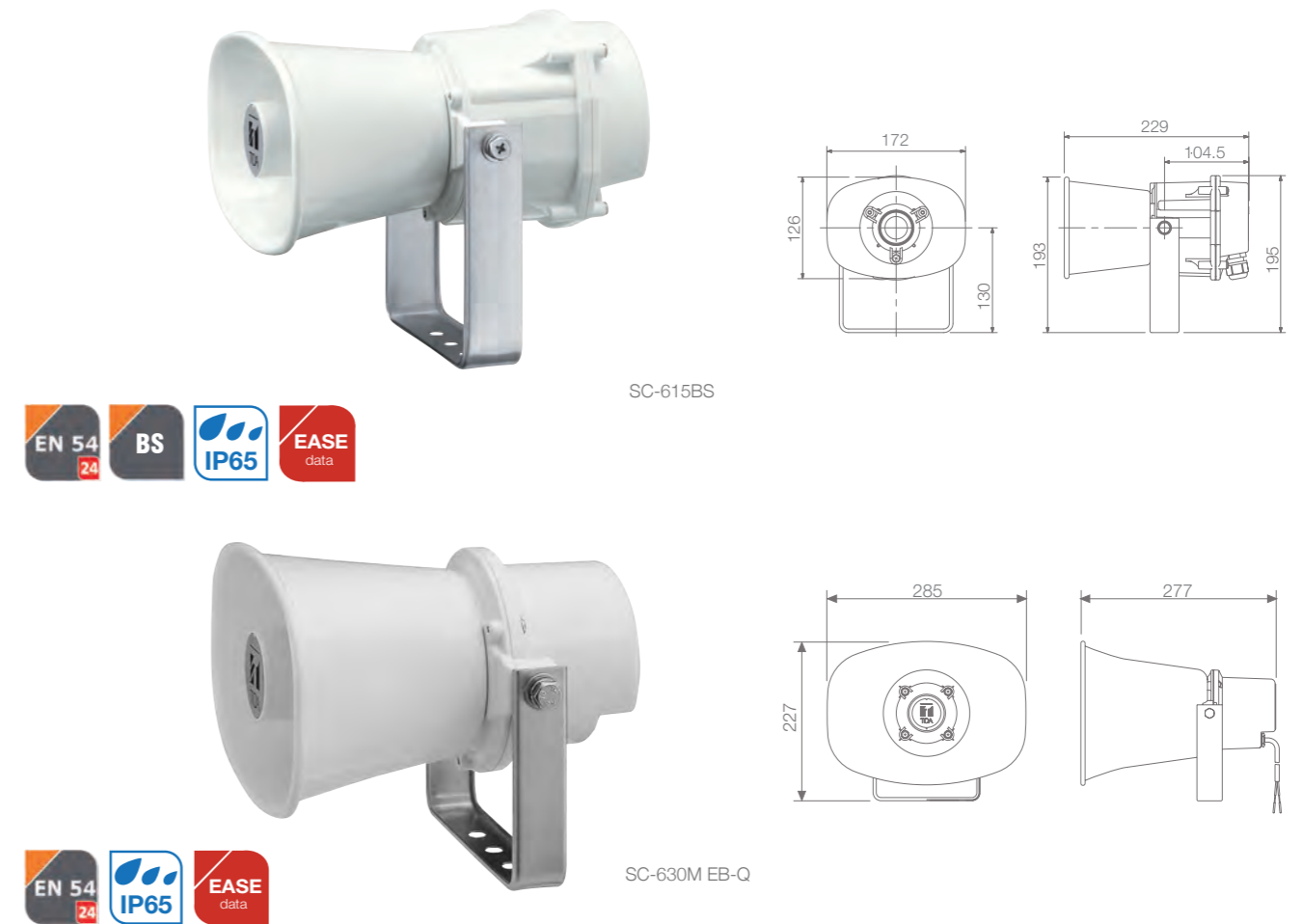
SC-630M EB-Q

SC-615BS

- All weather durabilty
- Very rugged and durable construction ensures long term reliable operation
- Excellent speech clarity
- High SPL
- Wide frequency response
- Easy impedance selection

SC-630M EB-Q

- All weather durability
- Unique oval shape
- Excellent speech clarity
- High SPL

Applications

- Factory premises
- Ships
- Park houses
- Stations
- Stadiums
- Open air pools

Specifications

	SC-615BS	SC-630M EB-Q
Rated Input	15W (100V)	30W (100V)
Tappings	15 / 10 / 5 / 3W (100V), 15 / 7.5 / 5 / 2.5 / 1.5W (70V)	30 / 15 / 10 / 5W (100V), 30 / 15 / 7.5 / 5 / 2.5W (70V)
Sensitivity (1W, 1m)	109dB	113dB
Frequency Response	315Hz – 12.5kHz	250Hz – 10kHz
Connection	Ceramic screw terminals, thermal fuse	
Colour	Horn flare: Aluminium, off-white, powder coating / Reflector horn: ABS resin, off-white / Bracket: Stainless steel	
Dimensions (W x H x D)	172 × 195 × 229mm	285 × 227 × 277mm
Weight	1.5kg	2kg
EN 54-24 Certificate No	0359-CPD-0109	1438-CPR-0280

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EN 54 Certified Speakers / Horn Speakers / **CS-64BS / CS-154BS**

CS-64BS
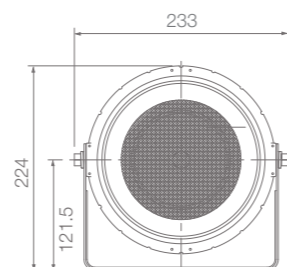
CS-154BS
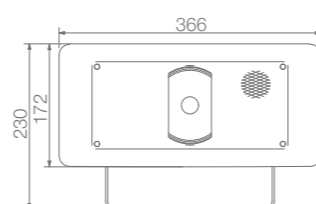
CS-64BS

- Round projection speaker for outdoor use
- Lightweight and rugged construction
- Exponential horn for improved directivity
- High SPL
- Complete with stainless steel bracket

CS-154BS

- Square weatherproof speaker for outdoor use
- High SPL
- Impact-proof light weight
- Complete with stainless steel bracket

Applications

- Plants
- Park houses
- Stations
- Stadiums
- Swimming pools
- Outdoor areas

Specifications

	CS-64BS	CS-154BS
Rated Input	6 W (100 V)	15 W (100 V)
Tappings	6 / 3 / 1 W (100 V), 6 / 3 / 1.5 / 0.5 W (70 V)	15 / 10 / 5 W (100 V), 15 / 7.5 / 5 / 2.5 W (70 V)
Sensitivity (1 W, 1 m)	96 dB	97 dB
Frequency Response	130 Hz – 13 kHz	150 Hz – 15 kHz
Connection	Ceramic screw terminals, thermal fuse	
Colour	Horn, cover: off-white / Punched net: dark-grey	
Dimensions (W x H x D)	233 × 224 × 249 mm	366 × 230 × 310 mm
Weight	1.7 kg	3 kg
EN 54-24 Certificate No	0359-CPD-0107	0359-CPD-0108

EN 54 Certified Speakers / Music Horn Speakers / **CS-530BS-EB / CS-660BS-EB**
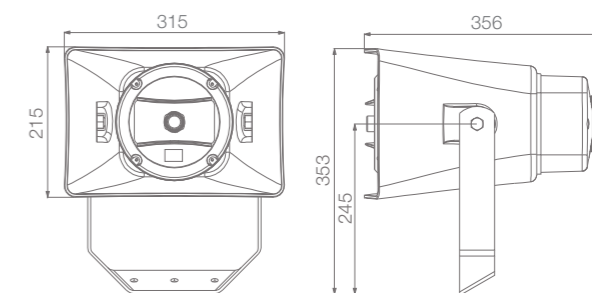
CS-530BS-EB
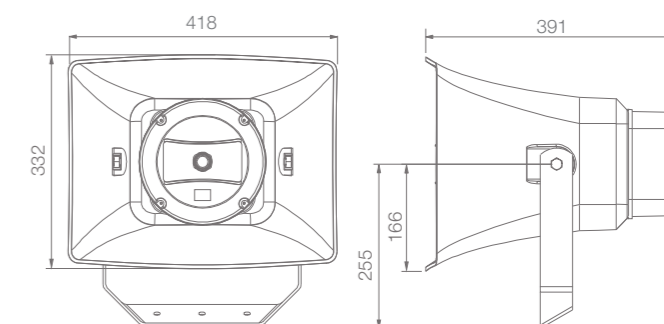
CS-660BS-EB

CS-530BS-EB / CS-660BS-EB

- Highly intelligible by 2-way system
- All weather durability, water and dust protection
- Impedance change available by tapping changing located inside the terminal cover

Applications

- Parking spaces
- Railway stations
- Outdoor playgrounds
- Sports fields

Specifications

	CS-530BS-EB	CS-660BS-EB
Rated Input	30 W (100 V)	60 W (100 V)
Tappings	30 / 15 / 7.5 / 3.75 W (100 V)	60 / 30 / 15 / 7.5 W (100 V)
Sensitivity (1 W, 1 m)	96 dB	97 dB
Frequency Response	120 Hz – 20 kHz	100 Hz – 20 kHz
Connection	Screw terminal	
Colour	Horn and terminal cover: ABS resin, light grey (RAL7035 or equivalent) / Brackets and screws: Stainless steel	
Dimensions (W x H x D)	315 × 215 × 356 mm	418 × 332 × 391 mm
Weight	4.7 kg	7.1 kg
EN 54-24 Certificate No	1488-CPR-0504/W	1488-CPR-0504/W

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EN 54 Certified Speakers/Projection Speakers/**PE-154EN/PE-154BS/PJ-154BS**

PE-154EN/PE-154BS

ø100   ø120

PJ-154BS

(Horizontal) 360°

PE-154EN/PE-154BS

- Special design to blend with lighting equipment
- Rugged HIPS resin enclosure
- Excellent sound quality
- 5 m cable (PE-154EN) or 3 m fire resistant cable (PE-154BS)
- PE-154BS according british standard

PJ-154BS

- Wide range frequency response
- Complete with mounting bracket for easy installation
- Supplied swivel bracket allows flexible speaker angle adjustment

Applications

- Supermarkets
- Shopping malls
- Restaurants & bars
- Public buildings & schools

Specifications

	PE-154EN	PE-154BS	PJ-154BS
Rated Input	15 W (100 V)		
Tappings	15 / 10 / 5 W (100 V), 7.5 / 5 / 2.5 W (70 V)		
Sensitivity (1 W, 1 m)	91 dB		
Frequency Response	70 Hz – 20 kHz		
Speaker Component	Low: 5" cone-type, High: 1" balanced dome tweeter		
Connection	Ceramic screw terminals, thermal fuse		Ceramic screw terminals, thermal fuse, external connection box, 5-wire BS-compliant
Colour	Off-white (RAL 9010 or equivalent colour)		
Dimensions (W x H)	186 × 251 mm		
Weight	2.1 kg	2.33 kg	2.1 kg
EN 54-24 Certificate No		0359-CPD-0105	0359-CPD-0106

EN 54 Certified Speakers/Projection Speakers/**PJ-202DL-EB**
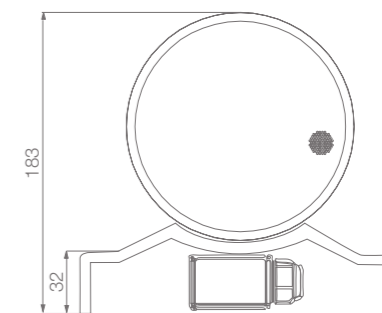
PJ-202DL-EB

- Bi-directional
- 2 x 5" cone speaker + HC
- Ceramic screw terminal
- Rugged bracket included
- Extreme wide temperature range: -25 °C to +70 °C

Applications

- Parking spaces
- Railway stations
- Outdoor playgrounds
- Sports fields

Specifications

	PJ-202DL-EB
Rated Input	20 W (100 V)
Tappings	20 / 10 / 5 W (100 V), 10 / 5 / 2.5 W (70 V)
Sensitivity	76 dB (1 W, 4 m, 100 Hz – 10 kHz pink noise, 2 speaker), 88 dB (1 W, 1 m, 100 Hz – 10 kHz pink noise, 2 speaker)
Frequency Response	120 Hz – 20 kHz
Speaker Component	5" P.P. cone + HC x 2
Connection	Ceramic screw terminals, thermal fuse, external connection box, 5-wire BS-compliant
Colour	Off-white (RAL 9010 or equivalent colour)
Dimensions (ø x D)	146 × 186 mm
Weight	3.2 kg
EN 54-24 Certificate No	1488-CPD-0338/W

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EN 54 Certified Speakers / Design Speakers / **F-1000 / F-1300 / F-2000**

F-1000BTWP EB-Q   F-1000WTWP EB-Q

F-1000BTWP EB-Q/
F-1000WTWP EB-Q

F-1300BTWP EB-Q/
F-1300WTWP EB-Q

F-2000BTWP EB-Q/
F-2000WTWP EB-Q
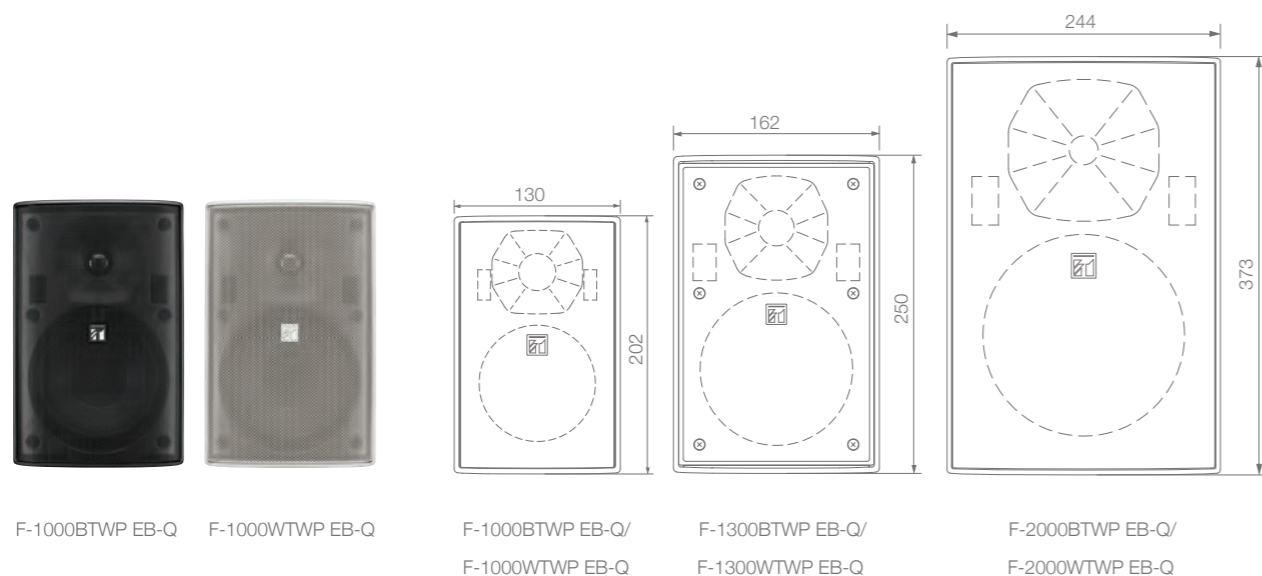
Features

- 15 W, 30 W or 60 W / 4 ", 5 " or 6 "
- 3 different versions available: Low impedance, high impedance and weatherproof version
- 2-way speaker with high quality 10 cm woofer and balanced dome tweeter
- Octagonal horn for clear, wide-area sound coverage
- Great variety of brackets available
- Easy impedance selection by rotary switch
- Built-in speaker protection for low impedance models

Options

- Please find mounting options and accessories from page 204

Applications

- Supermarkets
- Shopping malls
- Restaurants & bars
- Public buildings & schools

Specifications

	F-1000BTWP EB-Q/ F-1000WTWP EB-Q	F-1300BTWP EB-Q/ F-1300WTWP EB-Q	F-2000BTWP EB-Q / F-2000WTWP EB-Q
Rated Input	15 W (100 V)	30 W (100 V)	60 W (100 V)
Tappings	15 / 5 / 3 / 1 W (100 V), 15 / 7.5 / 2.5 / 1.5 / 0.5 W (70 V)	30 / 10 / 3 / 1 W (100 V), 30 / 15 / 5 / 1.5 / 0.5 W (70 V)	60 / 30 / 15 / 5 / 3 W (100 V), 15 / 7.5 / 2.5 / 1.5 W (70 V)
Sensitivity (1 W, 1 m)	87 dB	90 dB	92 dB
Frequency Response	85 Hz – 20 kHz	80 Hz – 20 kHz	65 Hz – 20 kHz
Speaker Component	Low: 10 cm cone-type High: 2.5 cm balanced dome-type	Low: 13 cm cone-type High: 2.5 cm balanced dome-type	Low: 20 cm cone-type High: 2.5 cm balanced dome-type
Connection	Screw terminals		
Finish	Enclosure: HIPS resin, black or white / Punched net: Surface-treated steel plate, black or white, paint		
Dimensions (W x H x D)	130 x 202 x 131 mm	162 x 250 x 161 mm	244 x 373 x 235 mm
Weight	2 kg	3.6 kg	7.4 kg
EN 54-24 Certificate No	1438/CPD/0282		

EN 54 Certified Speakers / Variable Array Speakers / **HX-5B-WP EB-Q / HX-5W-WP EB-Q**

HX-5B-WP EB-Q   HX-5W-WP EB-Q

Features

- Variable dispersion speaker system
- Four speaker modules ensure high power and high quality
- Weather & kick proof
- The changeable orientation of each of the four speaker modules independently allows the directivity angle of the speaker system to be adjusted

Option

- Matching Transformer: MT-200 (Tappings: 60 / 120 / 200 W)
- Please find mounting options and accessories from page 189

Applications

- Auditoriums
- Houses of worship
- Banquet halls
- Community centres
- Sport bars
- Shopping malls
- Boardrooms
- Gyms & health clubs

Specifications

	HX-5B-WP EB-Q	HX-5W-WP EB-Q
Power Handling Capacity	Continuous pink noise: 200 W, Program: 600 W	
Rated Impedance	8 Ω	
Sensitivity (1 W, 1 m)	96 dB (60° mode), 97 dB (45° mode), 98 dB (30° mode), 99 dB (15° mode)*	
Frequency Response	95 Hz – 20 kHz (-10 dB) (60° mode), 100 Hz – 20 kHz (-10 dB) (45° mode), 105 Hz – 20 kHz (-10 dB) (30° mode), 110 Hz – 20 kHz (-10 dB) (15° mode)	
Speaker Component	Low: 5" cone-type x 4, High: balanced dome-type x 12	
Connection	Integrated cable	
Colour	black	white
Dimensions (W x H x D)	408 x 546 x 342 mm	
Weight	16 kg	
EN 54-24 Certificate No	1438-CPR-281	

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02 INTERCOM SYSTEM

'Sounding bells, stamping feet, screaming children – yet still be notified clearly and in good time of every danger.'

For many people, a feeling of safety is of central importance. This is an area in which TOA is especially active and for which it has been developing highly innovative technology for many years. An intercom system must be easy to use while also delivering maximum clarity of speech. The latest network and interface technology enables flexible, decentralised implementation of the TOA intercom system.

Everything under control!
Yours, Dr Sound

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02 INTERCOM SYSTEM /

»We chose TOA due to high reliable products and their big efforts to ensure a flawless installation. «

Claude Thomas, Head of Maintenance and Operation MELOX Nuclear Site, Areva Group, France

The MELOX plant in France produces MOX fuel assemblies intended to power light-water reactors in different countries. MELOX (Areva Group), who is the world leader in this market, replaced a third of its Intercom system with TOA – the system in total includes 400 stations.

The presence of TOA engineers, the customized design of the Heavy Duty Industrial Master Station and a lot of efforts ensure a complete satisfaction to the users today.

The installation comprises more than 80 system components (N-8000EX, N-8065MS, N-8020MS, N-8000MS, N-8050DS) and was the beginning of a longlasting and very positive relationship.

The N-8000 project with a special designed station for the MELOX plant was realized with more than 80 system components and due to its success revealed in an extension of another factory just after.

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02 INTERCOM SYSTEM /

N-8000 Series

A highly reliable system assuring higher levels of security, versatility and sound quality.

TOA's unique N-8000 IP Intercom System is an integrated audio communication system that employs packet audio technology over the IP network to achieve fast, accurate communications with optimal security and reliability. Applications range from conversation, paging broadcasting and BGM broadcasting to emergency paging and broadcasting, audio triggering and other security functions.

Users can select between two communication modes according to their needs: Master-to-Master station communication for duplex conversation at factories, hospitals and various other facilities; or Master-to-Sub station communication for use by institutions such as schools or prisons. The system frequency response extends to 7 kHz, enabling reliable transmission of a full range of emergency communications, including clear, easily understandable PA announcements.

- System scalability
- Borderless communications
- Integrated communications and safety features
- Easy installation and maintenance
- Long-term cost-effectiveness
- Superior sound quality
- Full logging options
- Internal and external system security

Features

- System configuration by LAN with intuitive software
- Master-to-Master and Master-to-Sub station communication
- Choice of four wiring configurations: CAT5, 2-core shielded cables, 2 wires or 4 wires
- Integration with access control, voice alarm, CCTV and other such systems
- Time correction
- Operation and stream logs
- System diagnosis

Applications

- Schools
- Hospitals
- Prisons
- Parking garages
- Factories
- Airports
- Stadiums
- Offices

N-8000 Series / Station Selection Chart

		Desk-top	Optional Bracket	Wall-mount		Applicable Exchanges / Interfaces
IP Base	Master / Door Stations	N-8610RM	WB-200RM	N-8640DS	N-8640SB	
		N-8600MS	YC-280	N-8640DA	N-8650DS	
2-Wire Type	Master / Door Stations	N-8000MS	YC-280	RS-191 / N-8000PS	N-8050DS	N-8000EX
		N-8010MS	YC-280	N-8031MS / N-8033MS	N-8065MS Q-TEE	N-8010EX
		N-8011MS	YC-290			
		N-8020MS	YC-280	N-8050SB / N-8031SB		
2-Core Shielded Type	RS Master / Sub-stations and -panels			RS-150 / RS-180		N-8000RS
				RS-140 / RS-142	Vandal-resistant type	N-8010RS
				RS-144 / RS-143	RS-160 / RS-170 (Outdoor type)	
4-Wire Type		N-8410MS	YC-280	RS-450 / RS-442	RS-460 / RS-470	N-8400RS
					RS-480	
					RS-410EC	

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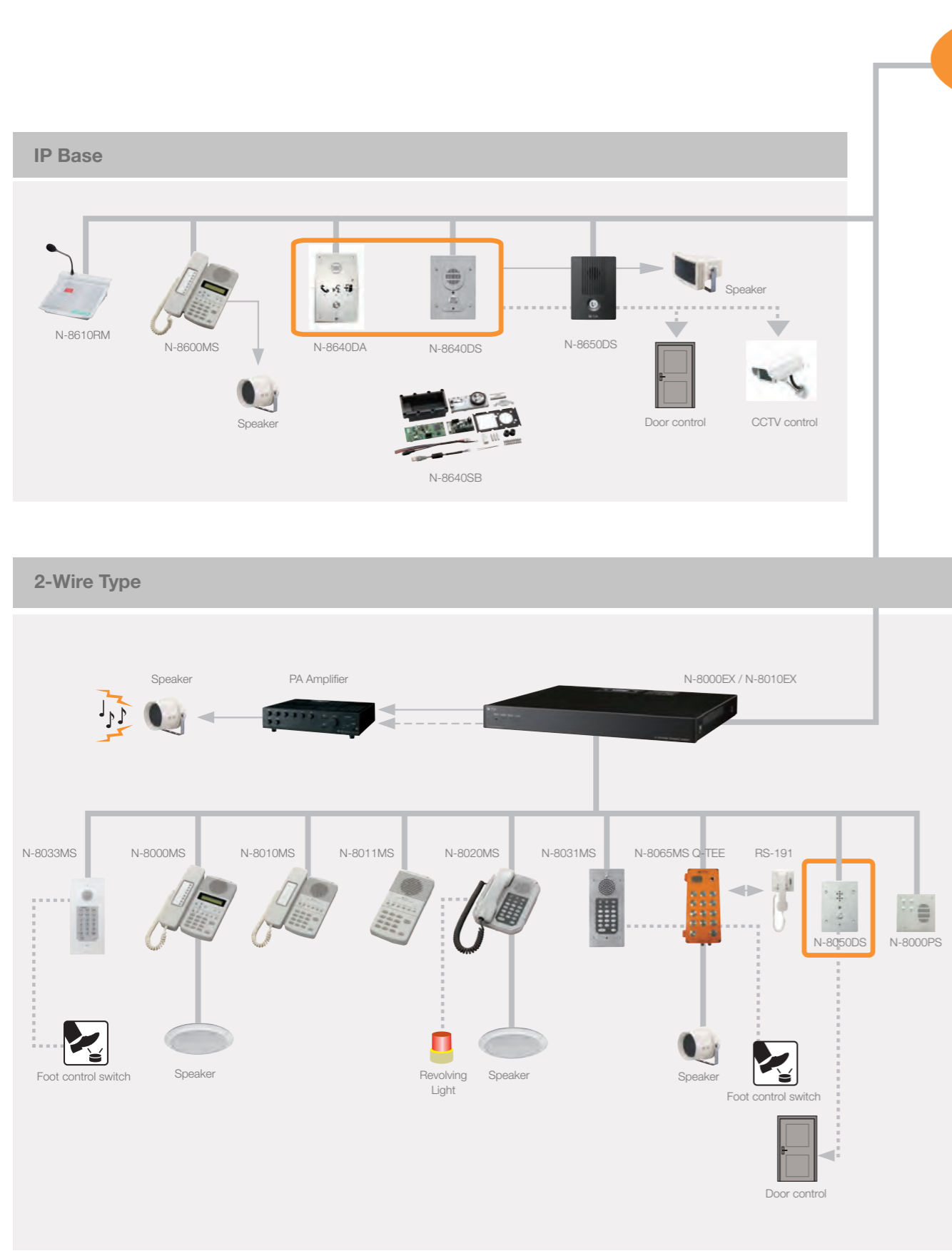
N-8000 Series / **System Overview**

N-8000 Series / **System Overview**

LAN / WAN

IP Base

N-8610RM

N-8600MS

N-8640DA   N-8640DS

N-8650DS

Speaker

Speaker

N-8640SB

Door control   CCTV control

2-Wire Type

Speaker   PA Amplifier   N-8000EX / N-8010EX

N-8033MS   N-8000MS   N-8010MS   N-8011MS   N-8020MS   N-8031MS   N-8065MS Q-TEE   RS-191

N-8050DS   N-8000PS

Foot control switch   Speaker   Revolving Light   Speaker   Speaker   Foot control switch

Door control

Interfaces

N-8000DI

N-8000AF

Contact Input   Contact Output   Operation panel

Digital Announcer

Amplifier

Recorder

N-8000MI

Speaker

Digital Announcer

Contact Input

Contact Output

Analog Telephone

Amplifier

Speaker

N-8000CO

Telephone

4-Wire Type

N-8400RS

N-8410MS

RS-450

RS-460   Revolving Light

RS-442

N-8000AF

RS-480

RS-410EC

RS-481

RS-470

2-Core Shielded Type

N-8000RS / N-8010RS

RS-150

RS-160

RS-170

RS-180

RS-141

RS-140   RS-143   RS-144   RS-142

Speaker

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N-8000 Series / IP Base Stations / **N-8600MS / N-8610RM**

N-8600MS

IP Multifunctional Master Station

Features

- With LC-Display
- Hands-free or handset conversation
- Auto-dialer function
- Headset terminal
- External speaker terminal
- High sound quality
- PoE
- Status LED

Options

- YC-280: Wall Mounting Bracket
- AD-1210P: AC Adapter

N-8610RM

IP Remote Microphone

Features

- 14 function keys
- Functions can be assigned individually
- Connection to SX-2000 System via LAN or switching hub and SX-200IP
- Up to 4 RM-210 Key Extension Units can be connected
- PoE
- Status LED

Options

- RM-210: Key Extension Unit
- WB-RM200: Wall Mounting Bracket
- AD-1210P: AC Adapter

Specifications

	N-8600MS	N-8610RM
Power Source	Power supply device that complies with IEEE802.3af standard or 12VDC (supplied from the AC Adapter (option))	
Power Consumption	3W (max.)	Use of the AC Adapter (12VDC): 4W, 8.5W (when connecting 4 RM-210 Key Extension Units) Use of the PoE (48VDC): 5.2W, 7.5W (when connecting 2 RM-210 Key Extension Units)
Speech Method	Hands-free or handset conversation	Hands-free conversation (use of goose-neck microphone)
Audio Frequency Range	300Hz – 7kHz	
External Speaker Terminal	Maximum output 0.5W, 8Ω, screwless connector (2P)	-
No. of connectable Expansion	-	Max. 4 units (maximum 2 units at PoE power supply)
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	
Voice Packet Loss Recovery	Silence insertion	
Audio Delay Time	80ms, 320ms (controllable on the software)	
Finish	Body, Handset: ABS resin, gray	ABS resin, blueish gray (PANTONE 538 or its equivalent)
Dimensions (W x H x D)	148 x 208 x 70.5mm (excluding a curl cord section)	190 x 76.5 x 215mm (excluding microphone)
Weight	0.77kg	0.7kg

N-8000 Series / IP Base Stations / **N-8640DS / N-8650DS**

N-8640DS

IP Door Station

Features

- For outdoor use
- Hands-free conversation
- High sound quality
- External speaker connector (8Ω)
- 1x Control In
- 4x Control Out / 1x Contact Out
- PoE
- Status LED

Options

- YC-150: Flush Mount Back Box
- YS-13A: Surface Mount Back Box
- AD-1210P: AC Adapter

IP65

N-8650DS

IP Door Station

Features

- For indoor use
- Hands-free conversation
- High sound quality
- External speaker connector (8Ω)
- 1x Control In
- 4x Control Out / 1x Contact Out
- PoE
- Status LED

Options

- YC-150: Flush Mount Back Box
- YS-13A: Surface Mount Back Box
- AD-1210P: AC Adapter

Specifications

	N-8640DS	N-8650DS
Power Source	Power supply device that complies with IEEE802.3af standard or 12VDC (supplied from the AC Adapter (option))	
Power Consumption	5W (max.)	
Speech Method	Hands-free conversation	
Audio Frequency Range	300Hz – 7kHz	
Contact Input	1 channel, no-voltage make contact input, open circuit voltage: 5VDC, short circuit current: 10mA or less, unterminated ends	
Contact Output	Open collector output, 4 channels, withstand voltage: 30VDC, control current: Max. 50mA (4 output 1COMMON), unterminated ends; Relay contact output, 1 channel, withstand voltage; 30VDC; control current: Max. 500mA, unterminated ends	
External Speaker Terminal	0.5W, 8Ω	
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	
Voice Packet Loss Recovery	Silence insertion	
Audio Delay Time	80ms, 320ms (controllable on the software)	
Resistance to Environment	BS EN62262: 2002: IK02 equivalent	-
Finish	Panel: Stainless steel (SUS304), hairline / Call button: Metal	ABS resin, dark gray
Dimensions (W x H x D)	115 x 162 x 58.5mm	117.2 x 162 x 60mm
Weight	0.78kg	0.4kg

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N-8000 Series / IP Base Stations / **N-8640SB / N-8640DA**

N-8640SB

IP Door Station Board Unit

Features

- For custom made solutions
- Features like N-8650DS
- PoE

Options

- AD-1210P: AC Adapter

N-8640DA

Barrier-free IP Doorstation

Features

- Provides a barrier-free access to public buildings in accordance with the German Equal Opportunities for people with Disabilities Act
- Vandal-resistant (IK07)
- 3 status LED for visualisation of calling / conversation / door opening
- Integrated Induction Loop Amplifier
- Integration into existing IP network
- Independent IP technology means no cost for additional central equipment, modules or licenses
- High voice quality (HD Voice)
- PoE

Options

- OW-101: Back Box On-wall
- IW-101: Back Box In-wall
- AD-1210P: AC Adapter

IP65

Specifications

	N-8640SB	N-8640DA
Power Source	Power supply device that complies with IEEE802.3af standard or 12VDC, supplied from the AC Adapter (option)	
Power Consumption	5 W (max.)	4.2 W (at rated input), 5.2 W (max.)
Speech Method	Hands-free conversation	
Audio Frequency Range	300 Hz – 7 kHz	
Contact Input	1 channel, no-voltage make contact input, open circuit voltage: 5VDC, short circuit current: 10mA or less, unterminated ends	-
Contact Output	Open collector output, 4 channels, withstand voltage: 30VDC, control current: Max. 50mA (4 output 1COMMON), unterminated ends; Relay contact output, 1 channel, withstand voltage; 30VDC; control current: Max. 500mA, unterminated ends	Relay contact output, 1 channel, withstand voltage: 30 V DC, control current: Max. 500 mA, screw terminal
External Speaker Terminal	0.5 W, 8 Ω	
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	
Voice Packet Loss Recovery	Silence insertion	
Audio Delay Time	80 ms, 320 ms (controllable on the software)	
Resistance to Environment	-	Housing Protection: IEC 62262: IK07
Finish	Panel: Stainless steel (SUS304), hairline / Call button: Metal	Panel: Aluminium brushed / Call button: Steel
Dimensions (W x H x D)	79 x 134 x 53 mm	150 x 247 x 45 mm
Weight	0.35 kg	0.8 kg

N-8000 Series / 2-Wire Type Stations / **N-8000MS / N-8010MS / N-8011MS**

N-8000MS

Multifunctional Master Station

Features

- With LC-Display
- Hands-free or handset conversation
- Auto-dialer function
- Headset terminal
- External speaker terminal
- High sound quality
- Status LED

Options

- YC-280: Wall Mounting Bracket

N-8010MS

Standard Master Station

Features

- Hands-free or handset conversation
- High sound quality
- Status LED

Options

- YC-280: Wall Mounting Bracket

N-8011MS

Standard Hands-free Master Station

Features

- Space saving design
- Hands-free conversation
- High sound quality
- Status LED

Options

- YC-290: Wall Mounting Bracket

Specifications

	N-8000MS	N-8010MS	N-8011MS
Power Source	48VDC (supplied from the IP network intercom exchange)		
Power Consumption	2.4 W (max.)		
Wiring Method	1 set of twisted pair cable		
Speech Method	Hands-free or handset conversation		Hands-free conversation
Audio Frequency Range	300 Hz – 7 kHz		
Transmission Range	Max. 1500 m (ø 0.65 mm, Loop resistance < 170 Ω) / 2,900 m (ø 0.9 mm)		
External Speaker Terminal	0.6 W, 8 Ω, screwless connector (2P)		-
Finish	Body, Handset: ABS resin, gray		Body: ABS resin, gray
Dimensions (W x H x D)	148 x 208 x 70.5 mm (excluding a curl cord section)		92 x 195 x 56.1 mm
Weight	0.8 kg	0.7 kg	0.4 kg

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N-8000 Series / 2-Wire Type Stations / **N-8020MS / N-8065MS / N-8033MS / N-8031MS**

N-8020MS
Industrial-Use
Master Station

Features
- Industrial use Master Station
- Dustproof and waterproof construction IP54
- Wide ambient temperature range
- Connection of external speaker
- Status LED

Options
- YC-280: Wall Mounting Bracket

IP54

N-8065MS Q-TEE
Heavy Duty
Industrial
Master Station

Features
- Heavy duty, full-metal Industrial Master Station
  with a full dial keyboard
- Designed to use in harsh environments due to its
  rugged build-up and its IP65 protection degree
- Hands-free conversation via external speaker
- Status LED

IP65

N-8033MS
Flush-Mount Master Station

Features
- Hands-free conversation
- Contact Input
- High sound quality
- Chemical resistant (clean room)
- Status LED

Options
- YC-841: Back Box

IP65

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

Features
- Hands-free or handset conversation
- Contact Input
- High sound quality
- Status LED

Options
- YC-241: Flush Mount Back Box
- YC-251: Surface Mount Back Box
- RS-191: Handset

Specifications

	N-8020MS	N-8065MS Q-TEE	N-8033MS	N-8031MS
Power Source	48VDC (supplied from the IP network intercom exchange)			
Power Consumption	2.4 W (max.)	1.8 W (at rated), 2.4 W (max.)	2.4 W (max.)	
Wiring Method	1 set of twisted pair cable			
Speech Method	Hands-free or handset conversation	Hands-free conversation		Hands-free (or handset conversation by optional RS-191)
Audio Frequency Range	300 Hz – 7 kHz			
Transmission Range	Max. 1500 m (ø 0.65 mm. Loop resistance < 170 Ω) / 2,900 m (ø 0,9 mm)			
Dial-in Contact Output / External Dial Input	Open collector output (The contacts have polarity.)/ Withstand voltage: max. 30 V DC, Control current: max. 50 mA, screwless connector (2P)	-	No-voltage make contact input, open voltage: 5 VDC, short-circuit current: 1 mA, screwless connector (5 pins)	
External Speaker Terminal	0.6 W, 8 Ω, screwless connector (2P)	0.6 W, 8 Ω, screw terminal	-	-
Dust/Water Protection	IP54	IP65	IP65 (Note that panel edges must be sealed at installation.)	-
Resistance to Environment	-	Vandal-resistant	Chemical Resistant	-
Finish	Body, Handset: ABS resin, gray	Body: Aluminum, orange	Membrane switch (Front pasting): Polyester film	Panel: Stainless steel (SUS304), hairline
Dimensions (W x H x D)	170 x 220 x 97.8 mm (excluding a curl cord section)	160 x 360 x 91 mm (without cable glands)	115 x 254 x 54.6 mm	
Weight	1 kg	3.75 kg	0.85 kg	

N-8000 Series / 2-Wire Type Stations / **N-8031SB / N-8050DS / N-8050SB / N-8000PS**

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N-8031SB
Master Station
Board

Features
- For custom made solutions
- Features like N-8031MS

Options
- RS-191: Handset

N-8050DS
Door Station

Features
- For indoor / outdoor use
- Hands-free conversation
- Contact output
- Status LED

Options
- YC-150: Flush Mount Back Box
- YS-13A: Surface Mount Back Box

IP54

N-8050SB
Door Station Board

Features
- Hands-free door station board unit
- For custom made solutions
- Features like N-8050DS

N-8000PS
Penitentiary station

Features
- Close integration with radio broadcasting system
- Discrete cell monitoring system
- Cell blocking function
- Strobe light integration
- Dedicated monitoring software
- Vandal resistant construction

Specifications

	N-8031SB	N-8050DS	N-8050SB	N-8000PS
Power Source	48VDC (supplied from the IP network intercom exchange)			Speech module: 48 VDC, supplied by intercom exchange unit N-8000EX (1.8 W) / BGM module: 24 VDC, supplied by external power source (8 W)
Power Consumption	2.4 W (max.)			3.8 W
Wiring Method	1 set of twisted pair cable			Speech module: CAT5-UTP / BGM module: two single pair cables (audio+power)
Speech Method	Hands-free (or handset conversation by optional RS-191)	Hands-free conversation		
Audio Frequency Range	300 Hz – 7 kHz			150 Hz – 17kHz
Transmission Range	Max. 1500 m (ø 0.65 mm, Loop resistance < 170 Ω) / 2,900 m (ø 0,9 mm)			Up to 1,500 m (using CAT5 4 x 2 x 0.8 mm, loop resistance <170 Ω)
External Dial Input / Contact Output	No-voltage make contact input, open voltage: 5 VDC, short-circuit current: 1 mA, screwless connector (5 pins)	Open collector output, withstand voltage: max. 30 V DC, control current: max. 50 mA, one shot: can be set from1 to 9 sec, screw terminal (polarized)		1 channel: no-voltage make contact, used to connect external cut-off switch / 1 channel: 12/24VDC powered output, used for external status indicator
Resistance to Environment	-	BS EN62262: 2002: IK02 equivalent	-	-
Finish	-	Panel: Stainless steel, hairline / Call button: Metal	-	Case: Stainless steel, vandal-proof / Vandal-proof metal buttons (MUTE, VOL+, VOL-, CALL)
Dimensions (W x H x D)	70 x 185 x 20.6 mm	115 x 162 x 54 mm	67 x 128.3 x 26 mm	244 x 244 x 83 mm
Weight	0.21 kg (including accessories)	0.68 kg	0.1 kg (including accessories)	3.1 kg

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N-8000 Series / Exchanges / **N-8000EX / N-8010EX**

N-8000EX

IP Network Intercom Exchange

Features

- 10 Base-T / 100 Base-TX Ethernet network connection
- 16 station capacity
- Stations connect to exchange via twisted pair cable
- 4 internal / 8 external speech links
- 2 audio paging outputs, 2 relay outputs

Options

For installation in cabinet racks:
- MB-15B-BK (installation of one unit)

N-8010EX

IP Network Intercom Exchange

Features

- 10 Base-T / 100 Base-TX Ethernet network connection
- 16 station capacity
- 2-wire connection between stations and exchange
- 1 internal / 2 external speech links

Options

For installation in cabinet racks:
- MB-15B-BK (installation of one unit)

Specifications

	N-8000EX	N-8010EX
Power Source	220 – 240 VAC, 50/60 Hz	
Power Consumption	50 W (at rated), 75 W (max.)	
Interface Section		
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 (ø 0.65 mm, Loop resistance < 170 Ω) / 2,900 m (ø 0.9 mm)	
Paging Output	Audio: 2 channels max. 0 dBV, 600 Ω, balanced, detachable terminal block Control: 2 channels, no-voltage make contact output (24 VDC/0.5 A), 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 Transmision System	Unicast, Multicast	
Audio Packet Transmission	Silence insertion	
Audio Delay Time	80 ms, 320 ms (Controllable on the software)	
Finish	Pre-coated steel plate, black, 30 % gloss	
Dimensions (W x H x D)	420 x 44.3 x 356 mm	
Weight	4.1 kg	4.2 kg

N-8000 Series / Interfaces / **N-8000RS / N-8010RS / N-8400RS**

N-8000RS

Sub-station Interface Unit

Features

- 10 Base-T / 100 Base-TX Ethernet network connection
- 16 sub-station capacity
- 3-wire connection between stations and unit
- 2 speech links

Options

- YC-850: Wall Mounting Bracket

For installation in cabinet racks:
- MB-15B-BK (installation of one unit)

N-8010RS

Sub-station Interface Unit

Features

- 10 Base-T / 100 Base-TX Ethernet network connection
- 16 sub-station capacity
- 3-wire connection between stations and unit
- 1 speech link

Options

- YC-850: Wall Mounting Bracket

For installation in cabinet racks:
- MB-15B-BK (installation of one unit)

N-8400RS

Sub-station Interface Unit

Features

- 10 Base-T / 100 Base-TX Ethernet network connection
- 16 sub-station capacity
- 4-wire connection between stations and unit
- 2 speech links

Options

- YC-850: Wall Mounting Bracket

For installation in cabinet racks:
- MB-15B-BK (installation of one unit)

Specifications

	N-8000RS	N-8010RS	N-8400RS
Power Source	220 – 240 VAC, 50 / 60 Hz		CE: 220 – 240 VAC, 50 / 60 Hz CU: 120 VAC, 50 / 60 Hz
Power Consumption	CE: 40 W (at rated), 50 W (max.)	CE: 32 W (at rated), 38 W (max.)	CE: 35 W (at rated), 50 W (max.) CU: 30 W (at rated), 45 W (max.)
Interface Section for Sub-station			
Number of Lines	16 lines		
Number of Speech Link	2 links	1 link	2 links external / 1 link internal
Transmission Range	500 m / ø 0.5 mm, 800 m / ø 0.65 mm, 1.3 km / ø 0.9 mm		1 km / ø 0.5 mm, 1.5 km / ø 0.65 mm, 2 km / ø 0.9 mm
Wiring Method	Two-core shielded cable		2 sets of twisted pair cables
Network Section			
Network I/F	10BASE-T/100BASE-TX (Automatic-Negotiation)		
Network Protocol	TCP/IP, UDP, ARP, ICMP, HTTP, RTP, IGMP		
Audio Packet Transmision System	Unicast, Multicast		
Voice Packet Loss Recovery	Silence insertion		
Audio Delay Time	80 ms, 320 ms (Controllable on the software)		
Finish	Pre-coated steel plate, black, 30 % gloss		
Dimensions (W x H x D)	420 x 44.3 x 325.5 mm		
Weight	3.9 kg	3.8 kg	4 kg

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N-8000 Series / Interfaces / **N-8000AL / N-8000CO / SX-200IP**

N-8000AL

Telephone Interface Unit

Features

• 10 Base-T / 100 Base-TX Ethernet network connection
• Single telephone line allowing one analogue telephone to be connected

Options

For installation in cabinet racks:
• MB-15B-BK (installation of one unit)
• MB-15B-J (installation of two units)

• YC-850: Wall Mounting Bracket

N-8000CO

C/O Interface Unit

Features

• 10 Base-T / 100 Base-TX Ethernet network connection
• Analog central office line circuit allowing the stations to make and receive calls to and from the telephone line

Options

For installation in cabinet racks:
• MB-15B-BK (installation of one unit)
• MB-15B-J (installation of two units)

• YC-850: Wall Mounting Bracket

SX-200IP

IP Interface Module

Features

• RJ45 connectors
• Enable paging announcement from the N-8000 Series stations (N-8600MS and N-8610RM) to the SX-2000 System

Specifications

	N-8000AL	N-8000CO
Power Source	220 – 240 V AC, 50 / 60 Hz	
Power Consumption	8 W (max.)	7 W (max.)
Line: Public Switched telephone networks		
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 Transmision System	Unicast, Multicast	
Finish	Pre-coated steel plate, black, 30 % gloss	
Dimensions (W x H x D)	210 x 44.3 x 267 mm	
Weight	1.7 kg	

N-8000 Series / Interfaces / **N-8000MI / N-8000DI / N-8000AF**

N-8000MI

Multi Interface Unit

Features

• 10 Base-T / 100 Base-TX Ethernet network connection
• 16x Contact Input / 16x Contact Output
• Function to diagnose system line and network status
• 2x Audio Inputs: Paging, BGM
• 2x Audio Outputs: Paging

Options

For installation in cabinet racks:
• MB-15B-BK (installation of one unit)

• YC-850: Wall Mounting Bracket

N-8000DI

Direct Select Unit

Features

• 10 Base-T / 100 Base-TX Ethernet network connection
• 32x Contact Input / 32x Contact Output
• Function to diagnose system line and network status

Options

For installation in cabinet racks:
• MB-15B-BK (installation of one unit)

• YC-850: Wall Mounting Bracket

N-8000AF

Audio Interface Unit

Features

• 10 Base-T / 100 Base-TX Ethernet network connection
• 8x Contact Input / 8x Contact Output
• Time synchronization input
• Built-in timer and chime
• Function to diagnose system line and network status
• Audio Input: Paging
• Audio Output: Paging

Options

For installation in cabinet racks:
• MB-15B-BK (installation of one unit)
• MB-15B-J (installation of two units)

• YC-850: Wall Mounting Bracket

Specifications

	N-8000MI	N-8000DI	N-8000AF
Power Source	220 – 240 V AC, 50 / 60 Hz		
Power Consumption	CE: 24 W (230 mA) (max.) CU: 21 W (330 mA) (max.)	16 W (max.)	7 W (max.)
Audio Input	Input: 2 inputs (2P/input), max. 0 dBV, under 600 Ω, balanced, with a semi-fixed volume for adjustment (0 to -25 dB) Control: 2 inputs (2P/input), no-voltage make contact input, open voltage: 12 VDC, short-circuit current: 10 mA Removable terminal block (8 pins)	-	1 input (transformer isolated), -58 dBV to 0 dBV, 2 kΩ, balanced (MIC/LINE input, controllable on the software), with input volume control knob, removable terminal block (3 pins)
Audio Output	Output: 2 outputs (2P/output), max. 0 dBV, under 600 Ω, balanced Control: 2 outputs (2P/output), relay contact output, contact capacity: 24 VDC/0.5 A, Removable terminal block (8 pins)	-	1 output (transformer isolated), 0 dBV, 600 Ω, balanced, removable terminal block (3 pins)
Contact Input	16 inputs, no-voltage make contact input, open voltage; 12 VDC, short-circuit current: 10 mA, removable terminal; block (18 pins), (1 common terminal for 4 inputs)	32 inputs, no-voltage make contact input, open voltage: 24 VDC, short-circuit current: 5 mA or less, removable terminal block (20 pins)	8 inputs, no-voltage make contact input, open voltage: 24 VDC, short-circuit current: 5 mA or less, removable terminal block (10 pins), (1 common terminal for 4 inputs)
Contact Output	16 outputs, relay contact output, contact capacity: 24 VDC / 0.5 A, removable terminal block (18 pins)	32 outputs, relay contact output, contact capacity: 24 VDC / 2 - 500 mA, removable terminal block (32 pins)	8 outputs, relay contact output, output capacity: 24 VDC / 2 - 500 mA, 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 Transmision System	Unicast, Multicast		
Voice Packet Loss Recovery	Silence insertion	-	Silence insertion
Audio Delay Time	80 ms, 320 ms (Controllable on the software)	-	80 ms, 320 ms (Controllable on the software)
Finish	Pre-coated steel plate, black, 30% gloss		
Dimensions (W x H x D)	420 x 44.3 x 239.5 mm	420 x 44.3 x 267 mm	210 x 44.3 x 267 mm
Weight	2.8 kg		1.7 kg

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N-8000 Series / 2-Core Shielded Type Sub-stations / **RS-180 / RS-170 / RS-160 / RS-150**

RS-180

Sub-station
(Emergency Use)

Features
- Indoor use
- Heavy duty stainless steel faceplate
- Allows connecting to a remote alarm light or siren
- Status LED
- Half-duplex conversation

Options
- YC-302: 2-gang ElectricalBox
- YC-822: Indoor Wall Mount Box
- YC-823: Outdoor Wall Mount Box

RS-170

Sub-station
(Outdoor Vandal-Resistant Type)

Features
- Vandal- and weather-resistant
- Outdoor/Indoor use
- Heavy duty stainless steel faceplate
- Half-duplex conversation

Options
- YC-302: 2-gang Electrical Box
- YC-822: Indoor Wall Mount Box
- YC-823: Outdoor Wall Mount Box

RS-160

Sub-station
(Indoor Vandal-Resistant Type)

Features
- Vandal-resistant
- Indoor use
- Heavy duty stainless steel faceplate
- Half-duplex conversation

Options
- YC-302: 2-gang Electrical Box
- YC-822: Indoor Wall Mount Box

RS-150

Sub-station
(Indoor Type)

Features
- Cost-effective
- Indoor use
- Half-duplex conversation

Options
- YC-302: 2-gang Electrical Box
- YC-822: Indoor Wall Mount Box

Specifications

	RS-180	RS-170	RS-160	RS-150
Control Output	Open collector output: 24 V DC, 30 mA (The open collector output is kept turned on till the conversation is finished after the call button was pressed.)	-		
Internal Speaker	4 cm, cone-type			
Rated Impedance	625 Ω (1 W / 25 V)			
Finish	Panel: Stainless steel (SUS304), hairline / Call Button: Metal, red Printed Circuit Board: Weather-resistant coating	Panel: Stainless steel (SUS304), hairline / Call Button: Metal		Panel: Stainless steel (SUS304) / Call Button: Resin, black
Dimensions (W x H x D)	120 x 120 x 58.5 mm	120 x 120 x 57.5 mm		120 x 120 x 48.5 mm
Weight	0.57 kg	0.54 kg		0.41 kg

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N-8000 Series / 2-Core Shielded Type Sub-panels / **RS-144 / RS-143 / RS-140 / RS-142**

RS-144

IP Intercom
Switch Panel

Features
- Indoor use
- 2 call buttons
- Half-duplex conversation
- Handset conversation (with optional RS-141)
- Conversation via external speaker (optional)

Options
- YC-801: Flush Mount Box
- YC-802: Wall Mount Box
- RS-141: Handset
- External Loudspeaker e.g. BS-678

RS-143

IP Intercom
Switch Panel

Features
- Indoor use
- 1 call button
- Half-duplex conversation
- Handset conversation (with optional RS-141)
- Conversation via external speaker (optional)

Options
- YC-801: Flush Mount Box
- YC-802: Wall Mount Box
- RS-141: Handset
- External Loudspeaker e.g. BS-678

RS-140

Switch Panel

Features
- Indoor Use
- Status indicator (Call, Conversation, Privacy)
- With call and privacy button
- Half-duplex conversation
- Handset conversation (with optional RS-141)
- Conversation via external speaker (optional)

Options
- YC-801: Flush Mount Box
- YC-802: Wall Mount Box
- RS-141: Handset
- External Loudspeaker e.g. BS-678

RS-142

IP Intercom
Switch Board

Features
- Possibility to make desired switch panels to meet intended purposes by combining RS-142 with the separately prepared operation panel
- 2 switches to be used as call buttons
- Half-duplex conversation
- Conversation via external speaker (optional)
- Handset conversation (with optional RS-141)

Options
- RS-141: Handset
- External Loudspeaker e.g. BS-678

Specifications

|	RS-144	RS-143	RS-140	RS-142
Call-in Switch	Momentary (EMERGENCY, NORMAL)	Momentary		-
Privacy Switch	-		Latching	-
Wiring	2-Core Shielded Cable			
External Speaker Connector	≥ 600 Ω			
Finish	Panel: Stainless steel, hairline Call-in Switch: Resin, red Privacy Switch (normal): Resin, white	Panel: Stainless steel, hairline Call-in Switch: Resin, red	Panel: Stainless steel, hairline Call-in Switch: Resin, red Privacy Switch (normal): Resin, white	-
Dimensions (W x H x D)	70 x 115 x 28.6 mm			-
Weight	0.08 kg			0.03 kg

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N-8000 Series / 4-Wire Type Stations / **N-8410MS / RS-410EC**

N-8410MS

Analog Standard
Master Station

Features

- Hands-free or handset conversation
- High sound quality
- Status LED

Options

- YC-280: Wall Mounting Bracket

RS-410EC

Emergency Station

Features

- Outdoor/Indoor use
- Vandal-resistant (IK10)
- Two different priotity-levels: emergency & standard
- Glass-protected emergency button
- Call-button allows everyday communication
  (e.g. with the secretariat)

Options

- OW-101: Installation Box On-wall
- IW-101: Installation Box In-wall

IP65

Specifications

	N-8410MS	RS-410EC
Power Source	24 VDC (supplied from the sub station interface unit N-8400RS)	-
Rated Input	-	1 W
Current Consumption	Max. 30 mA	-
Interface Section		
Number of Speech Link	1 link	-
Transmission Range	1 km / ø 0.5 mm (AWG24), 1.5 km / ø 0.65 mm (AWG22), 2 km / ø 0.9 mm (AWG19)	
Wiring Method	2 set of twisted pair cable	
Speech Method	Hands-free or handset conversation	Hands-free conversation
Audio Frequency Range	300 Hz – 7 kHz	
Resistant to Environment	-	Housing Protection: IEC 62262: IK10
Finish	Body, Handset: ABS resin, gray	Front plate: Aluminum / Call-buttons: Steel
Dimensions (W x H x D)	148 x 208 x 70.5 mm (excluding a curl cord section)	150 x 247 x 45 mm
Weight	0.72 kg	0.6 kg

N-8000 Series / 4-Wire Type Sub-stations / **RS-480 / RS-470 / RS-460 / RS-450 / RS-442**

RS-480

Sub-station
(Emergency Use)

Features

- Outdoor/Indoor use
- Vandal-resistant
- Half-duplex communication
- Heavy duty stainless steel faceplate
- Control output
- Handset conversation via optional RS-481

Options

- YC-302: 2-gang Electrical Box
- RS-481: Handset
- YC-822: Indoor Wall Mount Box
- YC-823: Outdoor Wall Mount Box

IP54

RS-470

Sub-station
(Outdoor Vandal-
Resistant Type)

Features

- Outdoor/Indoor use
- Vandal-resistant
- Half-duplex communication
- Heavy duty stainless steel faceplate

Options

- YC-302: 2-gang Electrical Box
- YC-822: Indoor Wall Mount Box
- YC-823: Outdoor Wall Mount Box

IP54

RS-460

Sub-station
(Indoor Vandal-
Resistant Type)

Features

- Indoor use
- Vandal-resistant
- Half-duplex communication
- Heavy duty stainless steel faceplate

Options

- YC-302: 2-gang Electrical Box
- YC-822: Indoor Wall Mount Box

RS-450

Sub-station
(Indoor Type)

Features

- Indoor use
- Cost-effective
- Half-duplex conversation

Options

- YC-302: 2-gang Electrical Box
- YC-822: Indoor Wall Mount Box

RS-442

IP Intercom
Switch Board

Features

- For custom made solutions
- 1 microphone, 3 switch inputs for call
  buttons and 1 speaker output
- Handset conversation via optional RS-481

Options

- RS-481: Handset

Specifications

	RS-480	RS-470	RS-460	RS-450	RS-442
Call-in Switch	Momentary (Emergency call: Press twice within 400 ms)				-
Control Output	Open collector output: 30 VDC, 30 mA		-		
Internal Mic	Electret condenser type				
Internal Speaker	Cone-type				-
Wiring	Twisted pair cables (2-pair)				
Resistant to Environment	BS EN62262: 2002: IK02 equivalent				-
Finish	Panel: Stainless steel, hairline / Call Switch: Metal, red / Circuit board: Weather-resistant coating	Panel: Stainless steel, hairline / Call Switch: Metal, silver		Panel: Stainless steel, hairline / Call Switch: Resin, black	-
Dimensions (W x H x D)	120 x 120 x 50.5 mm	120 x 120 x 49.5 mm		120 x 120 x 41.5 mm	-
Weight	0.58 kg	0.55 kg	0.54 kg	0.51 kg	0.14 kg

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N-8000 Series / **Accessories**

		Article Number	Finish	Dimensions W x H x D in mm
	Wall Mounting Bracket • Designed to mount N-8000RS, N-8010RS, N-8400RS, N-8000DI, N-8000AF, N-8000AL and N-8000CO on a wall	YC-850	Surface-treated steel plate, black, 30 % gloss	45.1 x 220 x 10
	Wall Mounting Bracket • Designed to mount N-8000MS, N-8010MS, N-8020MS, N-8410MS and N-8600MS on a wall	YC-280	Surface-treated steel plate, gray, paint	100 x 140 x 31.8
	Wall Mounting Bracket • Designed to mount N-8011MS on a wall	YC-290	Surface-treated steel plate, gray, paint	64 x 131.5 x 31.8
	Surface Mount Back Box • Designed to mount N-8031MS on a wall	YC-251	Surface-treated steel plate, white	124 x 258.5 x 50.5
	Flush Mount Back Box • Designed to surface-mount N-8031MS in a wall	YC-241	Colored chrome painting	276 x 119 x 67
	Flush Mount Back Box • Designed to flush-mount N-8050DS, N-8640DS and N-8650DS in a wall	YC-150	Zinc-plating	184 x 119 x 57
	Flush Mount Box • Designed to flush-mount RS-140, RS-143 and RS-144 in a wall	YC-801	Colored chrome painting	72 x 119 x 57

N-8000 Series / **Accessories**

		Article Number	Finish	Dimensions W x H x D in mm
	Surface Mount Back Box • Designed to surface-mount N-8050DS, N-8640DS and N-8650DS on a wall	YS-13A	Zinc-plating	163.5 x 116.5 x 55
	Wall Mount Box • Designed to surface-mount RS-140, RS-143 and RS-144 on a wall	YC-802	Surface-treated steel plate, white	75 x 124 x 50.5
	2-gang Electrical Box • Designed to flush-mount RS-150, RS-160, RS-170, RS-180, RS-450, RS-460, RS-470 and RS-480 in a wall	YC-302	SPHT, MFZn4 (glazed chromate)	Outlet box: 102 x 102 x 44 Cover: 106 x 106 x 13
	Back Box • Designed to surface-mount N-8033MS on a wall	YC-841	Surface-treated steel plate, white	119 x 258 x 57
	Outdoor Wall Mount Box • Designed to surface-mount RS-170, RS-180, RS-470 and RS-480 on a wall	YC-823	Stainless plate, off-white	124 x 124 x 62
	Indoor Wall Mount Box • Designed to surface-mount RS-150, RS-160, RS-170, RS-180, RS-450, RS-460, RS-470 and RS-480 on a wall	YC-822	Surface-treated steel plate, white	124 x 124 x 61
	Installation Box In-wall • Designed to mount N-8640DA & RS-410EC in a wall	IW-101	Plastic	141 x 240 x 49
	Installation Box On-wall • Designed to mount N-8640DA & RS-410EC on a wall	OW-101	Aluminium	249 x 152 x 49
	AC Adapter • AC Adapter to operate the IP Station on AC	AD-1210P	-	-

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094–145 **03** SPEAKERS
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SOUND CHECK

03 SPEAKERS

'The buzz of conversation, laughter, hectic activity – yet never miss a back-ground announcement.'

Whether music, alarm or announcement – TOA has the right solution for every requirement and every location. A design loudspeaker must be adaptable to the relevant room architecture and a column loudspeaker must also be heard by those at the very back. All TOA loudspeakers have one thing in common – excellent sound quality.

So make sure you keep your ears open when purchasing loudspeakers!
Yours, Dr. Sound

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03 SPEAKERS /

More than 3,200 TOA speakers were installed in the Mega Mall in Chelyabinsk, a russian city in the Ural region.

» The wide range of TOA speakers gave us high flexibility and a great choice for our different areas of application. «

Mrs. Shumakova, Acting Director
„Rodnik" LLC, Russia

The shopping and entertainment complex ALMAZ with a total area of 222,000 m² and a target audience of over 900 thousand people was opened in October 2015. Today the installed SX-2000 system, 65 amplifiers, including the new VP-Series, and more than 3,200 speakers (BS-1030W, BS-1030B, PC-2369, PE-64, F-1300WT, PJ-100W, PC-648R, BS-633A, SC-630M, SC-615M) ensure clear announcements and pleasant background music to 3 floors with over 160 different stores.

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SOUND CHECK

03 SPEAKERS /

Ceiling Speakers / **PC-1868W-EB / PC-1869 / PC-1869S / PC-2369**

PC-1868W-EB

Ø 180

11

Ø 180   Ø 180   Ø 230

EASE data

PC-1869 / PC-1869S / PC-2369

67.1   4.2   111   4.2   72.8   5.5
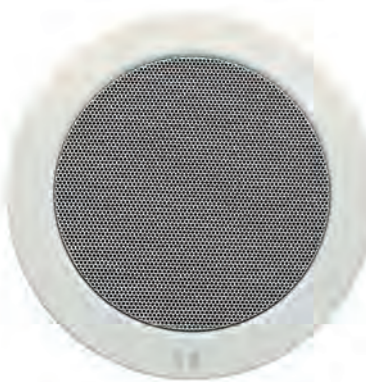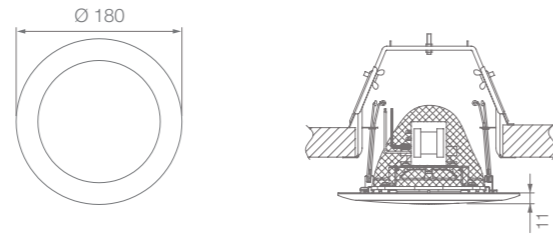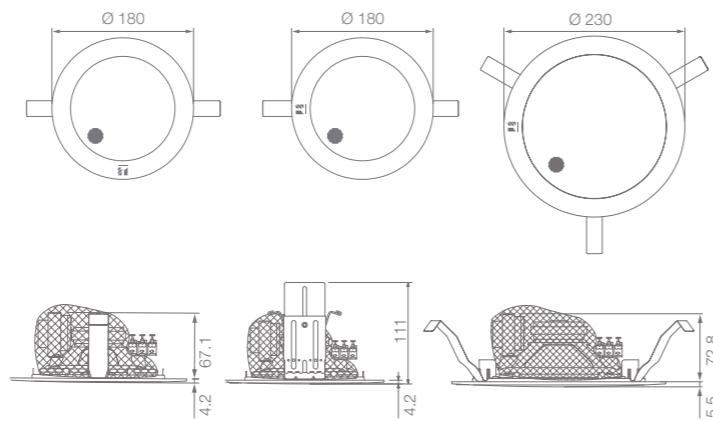
PC-1869   PC-1869S   PC-2369

PC-1869 / PC-2369 also available as EN certified version (page 57)

PC-1868W-EB

- 12 cm speaker
- Flat front panel
- Quick and easy installation thanks to its spring catch method
- Equipped with a metal grille and ABS resin baffle

PC-1869 / PC-1869S / PC-2369

- Flat front panel
- Fast & easy installation with spring catches
- Push-in connectors for speaker cables
- In-/Out bridge connection
- Ceiling thickness: 5 – 25 mm (PC-2369 / PC-1869), max. 34 mm (PC-1869S)

Applications

- Shopping centers
- Hotels
- Schools
- Retail stores
- Hospitals
- Exhibition halls

Specifications

	PC-1868W-EB	PC-1869	PC-1869S	PC-2369
Rated Input	6 W (100 V), 3 W (70 V)	6 W (100 V)		
Tappings	6 / 3 / 1 W (100 V), 3 / 1.5 / 0.5 W (70 V)	6 / 3 / 1.5 / 0.8 (100 V), 3 / 1.5 / 0.8 / 0.4 (70 V)		
Sensitivity (1 W, 1 m)		90 dB		93 dB
Frequency Response	100 Hz – 16 kHz	55 Hz – 18 kHz		45 Hz – 20 kHz
Mounting Hole Diameter		150 mm		200 mm
Speaker Component	12 cm cone-type		12 cm	16 cm double cone-type
Finish	Baffle: ABS resin, pure white (RAL 9016 or its equivalent) / Grille: Net, pure white, paint (RAL 9016 or its equivalent)	Baffle: Steel plate, off-white / Grille: Surface-treated steel plate net, pure white (RAL 9016 or its equivalent)		
Dimensions (ø x D)	180 x 110 mm	180 x 72 mm	180 x 111 mm	230 x 79 mm
Weight	675 g	620 g	750 g	760 g

Ceiling Speakers / **PC-2852 / PC-2869 / PC-2668**

Ø 280

83.6   7.1

PC-2852 / PC-2869

EASE data

Ø 260

Ø 260

93
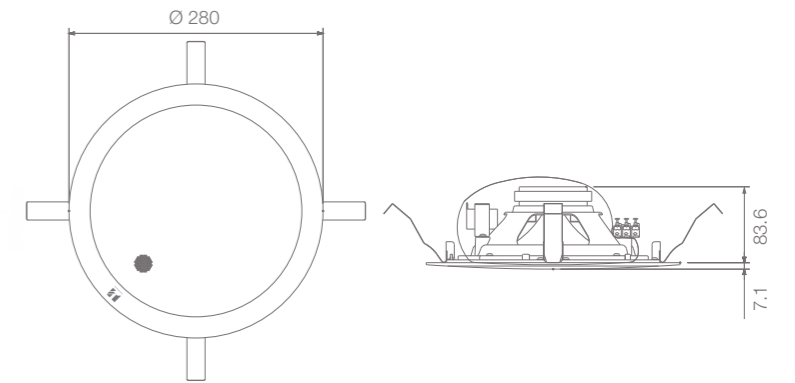
EASE data   PC-2668
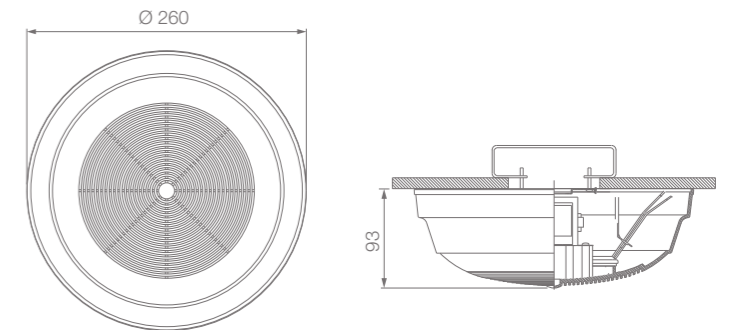
PC-2852 / PC-2869

- 20 cm speaker
- Rated input 15 W (PC-2852) or 6 W (PC-2869)
- Very high sound pressure level
- For paging and BGM
- Easy installation with spring catches
- Push-in terminals
- Bridge wiring

PC-2668

- 12 cm speaker
- Exposed installation to the ceiling (surface mounting)
- Easy installation with spring catches
- Push-in terminals for speaker cable
- In-/Out bridge connection
- Mounting bracket for optional back box included

Applications

- Multipurpose halls
- Shopping centers
- Hotels
- Schools
- Retail stores
- Hospitals
- Exhibition halls

Specifications

	PC-2852	PC-2869	PC-2668
Rated Input	15 W (100 V), 7.5 W (70 V)	6 W (100 V), 3 W (70 V)	6 W (100 V)
Tappings	15 / 10 / 5 / 3 W (100 V), 15 / 7.5 / 5 / 2.5 / 1.5 W (70 V)	6 / 3 / 1.5 / 0.8 W (100 V), 3 / 1.5 / 0.8 / 0.4 W (70 V)	
Sensitivity (1 W, 1 m)	96 dB	94 dB	90 dB
Frequency Response	45 Hz – 20 kHz	40 Hz – 20 kHz	100 Hz – 16 kHz
Mounting Hole Diameter	250 mm		-
Speaker Component	20 cm coaxial cone-type	20 cm double cone-type	12 cm dynamic cone-type
Finish	Baffle: Steel plate, traffic white (RAL 9016 or equivalent) / Grille: Surface-treated steel plate net, traffic white (RAL 9016 or equivalent)		Baffle: ABS resin, off-white / Grille: ABS resin, off-white
Dimensions (ø x D)	280 x 93 mm		260 x 202 mm
Weight	1,600 g	1,400 g	820 g (incl. bracket)

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Ceiling Speakers / **PC-1867F / PC-648R / PC-658R**

PC-1867F

PC-648R

Ø 180
Ø 156
116
5
110
11

Ø 168
67
10

PC-658R

Ø 192
63
10

EASE data
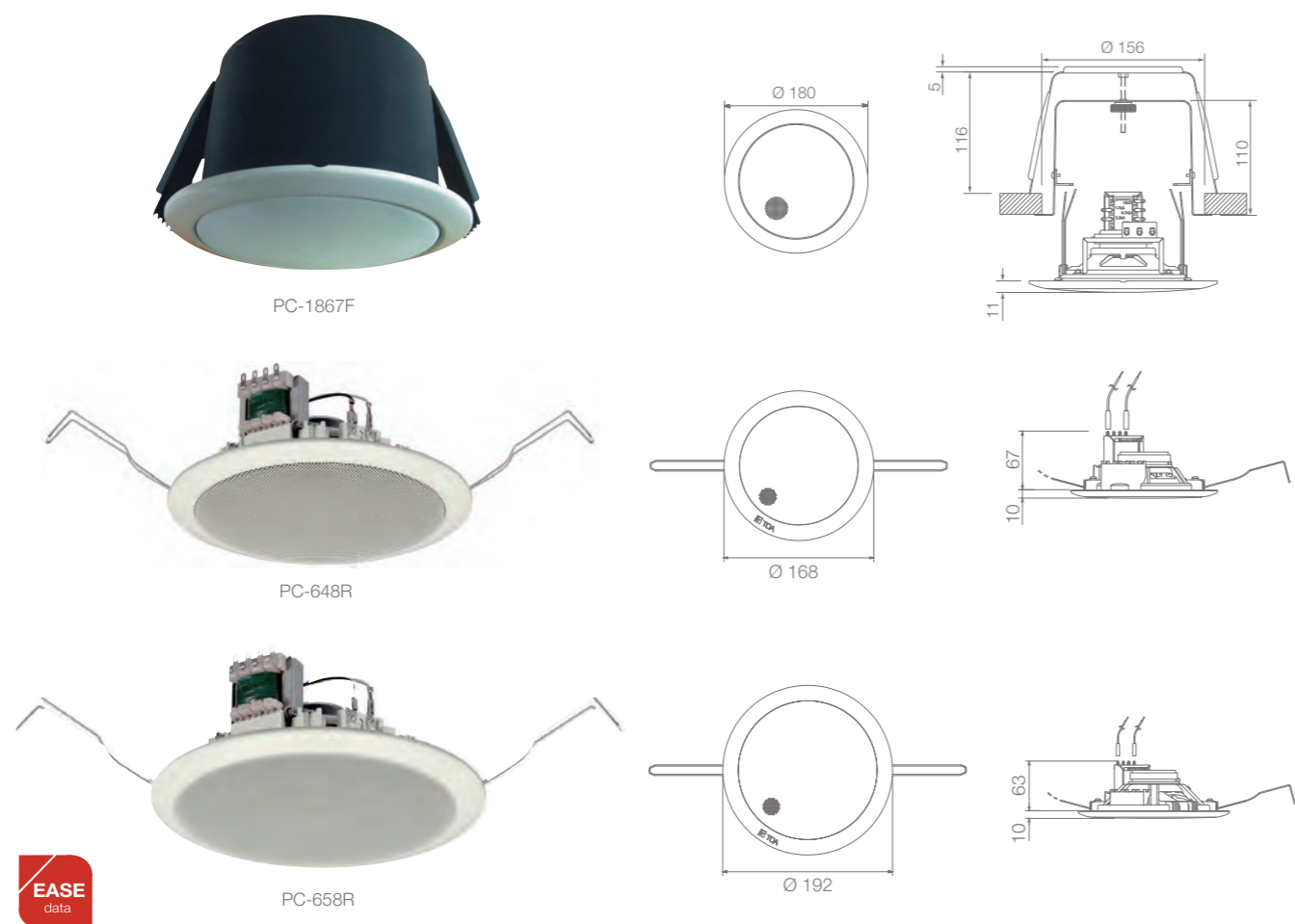
PC-1867F also available as EN certified version (page 57)

PC-1867F

- 9 W continuous program
- Fire dome made of steel
- Easy installation with spring catches
- 12 cm speaker
- For mounting in 156 mm holes

PC-648R / PC-658R

- Special design for thin ceiling
- Spring clamp mechanism for easy speaker mounting to the ceiling

Applications

- Shopping centers
- Hotels
- Schools
- Retail stores
- Hospitals

Specifications

	PC-1867F	PC-648R	PC-658R
Rated Input	6 W (100 V), 3 W (70 V)		
Tappings	6 / 3 / 1.5 / 0.8 W (100 V), 3 / 1.5 / 0.8 / 0.4 W (70 V)	6 / 3 / 1 W (100 V), 3 / 1.5 / 0.5 W (70 V)	
Sensitivity (1 W, 1 m)	90 dB		
Frequency Response	160 Hz – 13 kHz	100 Hz – 18 kHz	65 Hz – 18 kHz
Mounting Hole Diameter	156 mm ±3 mm	145 mm	170 mm
Speaker Component	12 cm cone-type		16 cm cone-type
Finish	Baffle, Grille: Aluminium, off-white (RAL 9010 or equivalent)	Frame: Polypropylene resin, off-white (RAL 9010 or equivalent) Grille: Surface-treated steel plate net, off-white (RAL 9010 or equivalent)	
Dimensions (ø x D)	180 x 121 mm	168 x 77 mm	192 x 73 mm
Weight	1.4 kg	470 g	500 g

100

Ceiling Speakers / **PC-6B / PC-6W / PC-6BM / PC-6WM-EB**

PC-6W

PC-6WM-EB

Ø 100

Ø 105

IPX4

PC-6B/W/BM

- Smallest diameter for blending into the ceiling without disfiguring the ceiling design
- For 93 mm holes
- Easy snap-in installation
- 5 pieces per package

PC-6WM-EB

- Smallest diameter for blending into the ceiling without disfiguring the ceiling design
- Wide frequency response
- Easy snap-in installation
- Metallic construction
- Impedance change available by changing the connection terminal

Applications

- Shopping centers
- Office buildings
- Hotels
- Schools
- Retail stores
- Hospitals

Specifications

	PC-6B / PC-6W	PC-6BM	PC-6WM-EB
Rated Input	6 W		
Impedance	4 Ω		100 V
Tappings	-	6 / 3 / 1.5 W (100 V)	6 / 4 / 2 W (100 V)
Sensitivity (1 W, 1 m)	86 dB		
Frequency Response	170 Hz – 20 kHz		100 Hz – 20 kHz
Mounting Hole Diameter	93 mm		85 mm
Speaker component	7 cm cone-type		
Finish	Housing: Plastic, Grille: Metal, black RAL 9005 (PC-6B/BM) or white RAL 9016 (PC-6W)		Baffle: Steel plate, RAL9016 or equivalent Grill: Steel plate net, RAL 9016 or equivalent
Dimensions (ø x D)	100 x 42 mm		105 x 72 mm
Weight	400 g	600 g	500 g

101

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SOUND CHECK

Ceiling Speakers / **PC-3CL / PC-5CL**

IP64   EASE data

PC-3CL

330 / 94.5 / 2 / 8
Ø 100
Ø 139

EASE data

330 / 93 / 2 / 6
Ø 116
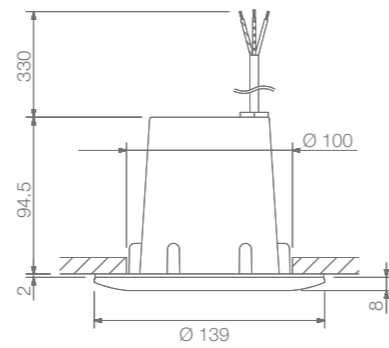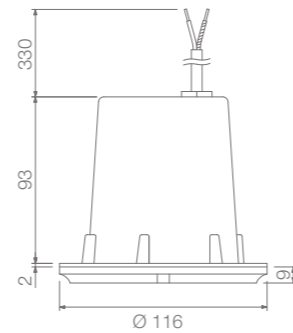
PC-5CL

PC-3CL

• Clean room / shower room speaker
• Resistant against formalin and iodine solutions
• Wide temperature range of -20 to 60°C

PC-5CL

• Clean room speaker
• Sealed high-molecular speaker membrane to prevent floating dust particles from contaminating the environment
• Resistant against formaline

Applications

• For humid or high temperature areas
• PC-3CL: Shower rooms, hospitals, chemical factories
• PC-5CL: Laboratories, computer rooms

Specifications

	PC-3CL	PC-5CL
Rated Input	3 W (100 V)	5 W (100 V), 2.5 W (70 V)
Tappings	3 / 1 W (100 V), 1.5 / 0.5 W (70 V)	-
Sensitivity (1 W, 1 m)	87 dB	87 dB
Frequency Response	150 Hz – 20 kHz	
Mounting Hole Diameter	100 mm	98 mm
Speaker Component	-	8 cm cone-type
Finish	Panel: Alloy-coated ABS resin / Grille: Stainless steel punching net	Panel: Alloy-coated ABS resin / Enclosure: ABS resin, off-white Punching net: Stainless steel / Exposed fixing screw: Stainless steel
Dimensions (ø x D)	139 x 104.5 mm	116 x 110 mm
Weight	550 g	620 g

Ceiling Speakers / **PC-3WR**

IP64   EASE data

Ø 180
120 / 110
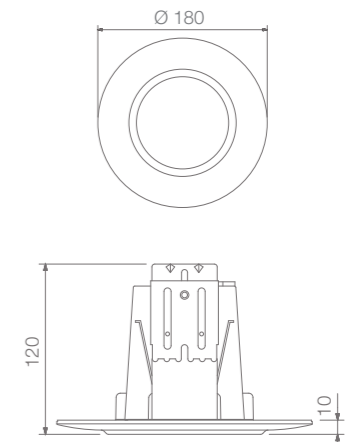
PC-3WR

• For humid or high temperature areas
• Wide temperature range of -10 to 50°C
• Fits in 150 mm holes

Applications

• Shower rooms
• Locker rooms

Specifications

	PC-3WR
Rated Input	3 W (100 V)
Tappings	3 / 1 W (100 V)
Sensitivity (1 W, 1 m)	88 dB
Frequency Response	180 Hz – 20 kHz
Mounting Hole Diameter	150 mm
Finish	Panel / Case: ABS resin, off white / Punched grille: stainless steel
Dimensions (ø x D)	180 x 120 mm
Weight	700 g

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SOUND CHECK

Ceiling Speakers / Wide Dispersion Speakers / F-Series

Expanded listening coverage area through extra-wide dispersion characteristics.

These ceiling-mount speakers have been designed and engineered to overcome some of the limiting factors that have been associated with conventional ceiling-mount speakers.

Most noticeable has always been the high-frequency roll-off that resulted from limited speaker dispersion characteristics. The F-Series provides well-balanced audio reproduction without treble attenuation over an expanded listening area thanks to the extra-wide dispersion characteristics that are part of the overall speaker design. Perceived speaker directionality and beaming tendencies are minimised, resulting in a natural, well-balanced sound over a wide area at all levels. Conventional speakers exhibit high frequency roll-off characteristics as the distance between speaker and listener increases. An ideal ceiling-mounted speaker's response characteristics should include wide dispersion and non-frequency dependent directionality and this ceiling speaker series proves that.

Conventional Speaker | Wide dispersion Speaker
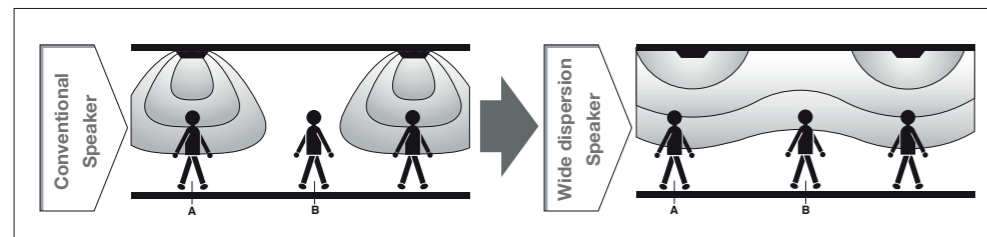
Features

- High quality sound over a wide area with fewer speakers, reduces cabling expenses
- Designed to blend into ceilings with a smooth, low-profile design
- Extra ease of use and higher cost-effectiveness with the metal „back can" enclosure for the speaker rear (F-122C, F-2352C, F-2852C, F-2322C models)
- Fire-resistant baffles and rims according to UL94 V-0, plus steel punched net

Options / Accessories

- Please find accessories on page 145

Applications

- Shopping malls
- Hotels
- Office buildings
- Areas with demanding safety standards (UL94 V-0)

Ceiling Speakers / Wide Dispersion Speakers / F-Series / **F-122C / F-2322C**

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SOUND CHECK

Ø 230 | Ø 195 | 229 | 41

EASE data

F-122C

Ø 230 | Ø 195 | 200 | 12

EASE data
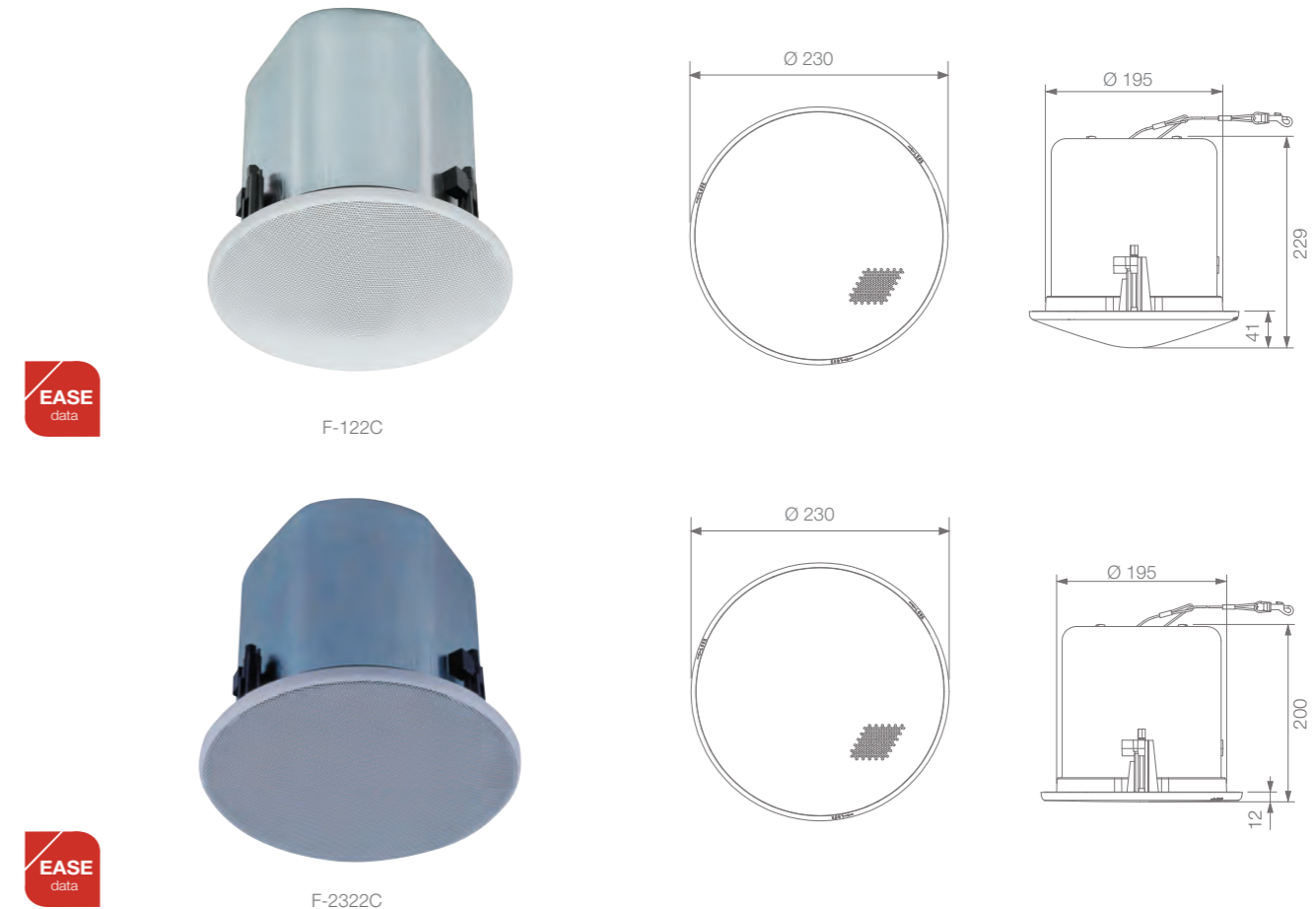
F-2322C

F-122C

- 30 W full range speaker
- Flat front panel
- High power
- Quick and easy installation
- Heat-resistant back can
- Diffusor for wide dispersion of high frequencies

F-2322C

- 30 W full range speaker
- Flat front panel
- High power
- Quick and easy installation
- Heat-resistant back can

Options

- HY-AH1: Anchor Hanging Bracket
- HY-BC1: Back Can
- HY-TB1: Tile Bar Bridge
- HY-TR1: Trim Ring

Applications

- For medium ceiling height (2 to 4 m)
- Corridors in shopping malls, hotels and office buildings

Specifications

	F-122C	F-2322C
Rated Input	30 W (100 V)	
Power Handling Capacity	Continuous pink noise: 60 W (8 Ω), 30 W (16 Ω), Continuous program: 120 W (8 Ω), 60 W (16 Ω)	
Tappings	30 / 10 / 3 / 1 W (100 V), 30 / 15 / 5 / 1.5 / 0.5 W (70 V)	
Sensitivity (1 W, 1 m)	90 dB	
Frequency Response	70 Hz – 20 kHz	
Mounting Hole Diameter	200 mm	
Speaker Component	12 cm cone-type	Low: 12 cm cone-type, High: Balanced dome-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 (ø x D)	230 x 229 mm	230 x 200 mm
Weight	3.7 kg	

SOUND CHECK

Ceiling Speakers / Wide Dispersion Speakers / F-Series / **F-1522SC / F-2352SC**

Ø 155
117
11

EASE data

F-1522SC

Ø 230
154
41

EASE data
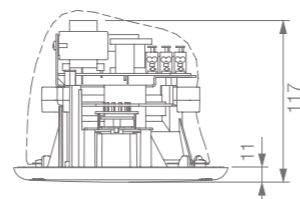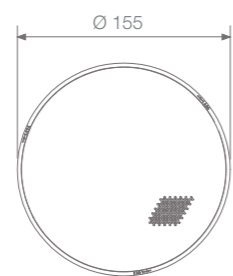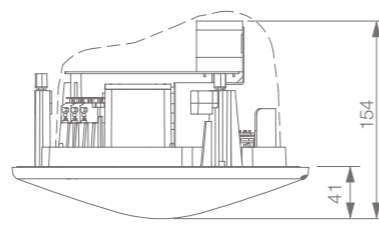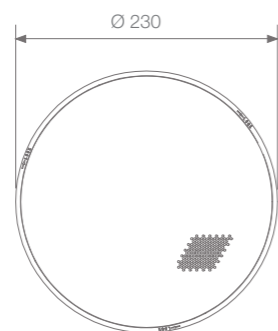
F-2352SC

F-1522SC

- Cost-effective full range speaker
- Flat front panel
- 117 mm mounting depth
- Easy installation
- Input selector switch permits easy verification and change of current impedance settings, even after installation

F-2352SC

- 2-way wide range speaker
- 154 mm mounting depth
- Easy installation
- Diffuser for wide dispersion of high frequencies

Applications

F-1522SC
- For medium ceiling height (2 to 4 m)
- Especially for low profile ceilings with limited depth and applications with lower power requirement

F-2352SC
- Low power applications and medium ceiling height (2 to 4m)
- Without back for low profile ceilings with minimal depth

Specifications

	F-1522SC	F-2352SC
Rated Input	6 W (100 V)	
Power Handling Capacity	Continuous pink noise: 9 W (8 Ω), 6 W (16 Ω), Continuous program: 18 W (8 Ω), 12 W (16 Ω)	
Tappings	6 / 3 W (100 V), 6 / 3 / 1.5 W (70 V)	6 / 3 / 1 / 0.5 W (100 V), 6 / 3 / 1.5 / 0.5 / 0.25 W (70 V), 16 Ω, 8 Ω
Sensitivity (1 W, 1 m)	88 dB	89 dB
Frequency Response	65 Hz – 18 kHz	80 Hz – 20 kHz
Mounting Hole Diameter	135 mm	200 mm
Speaker Component	10 cm cone-type	Low: 12 cm cone-type, High: Balanced dome-type
Finish	Baffle: Fire-resistant ABS resin, black / Rim: Fire-resistant ABS resin, white / Punched net: Steel plate, white, paint / Dust proof bag: Artificial fiber, black	
Dimensions (ø x D)	155 x 117 mm	230 x 154 mm
Weight	1 kg	1.5 kg

SOUND CHECK

Ceiling Speakers / Wide Dispersion Speakers / F-Series / **F-2352C / F-2852C**

Ø 230
Ø 195
229
41

EASE data

F-2352C

Ø 280
Ø 245
227
38

EASE data
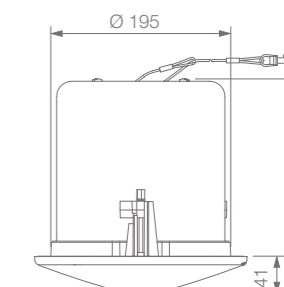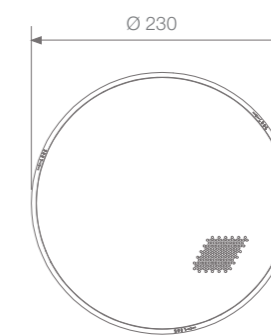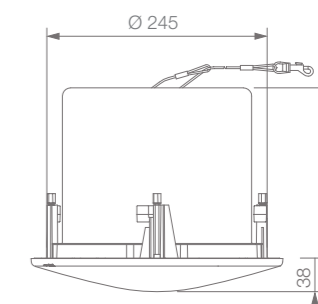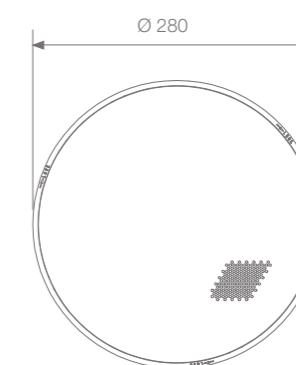
F-2852C

F-2352C

- 2-way speaker
- High power
- Quick and easy installation
- Overload protection
- Heat-resistant back can
- Diffuser for wide dispersion of high frequencies

Options

- HY-AH1: Anchor Hanging Bracket, HY-BC1: Back Can, HY-TB1: Tile Bar Bridge, HY-TR1: Trim Ring

F-2852C

- 2-way speaker
- High power
- Quick and easy installation
- Overload protection
- Heat-resistant back can
- Diffuser for wide dispersion of high frequencies

Options

- HY-AH1: Anchor Hanging Bracket, HY-TB1: Tile Bar Bridge

Applications

F-2352C
- For medium ceiling height (2 to 4 m)

F-2852C
- For high power (60 W) applications
- Locations with higher ceilings (3 to 6 m)
- Halls, corridors, stairways

Specifications

	F-2352C	F-2852C
Rated Input	30 W (100 V)	60 W (100 V)
Power Handling Capacity	Continuous pink noise: 60 W (8 Ω), 30 W (16 Ω), Continuous program: 120 W (8 Ω), 60 W (16 Ω)	Continuous pink noise: 90 W (8 Ω), 60 W (16 Ω), Continuous program: 180 W (8 Ω), 120 W (16 Ω)
Tappings	30 / 10 / 3 / 1 W (100 V), 30 / 15 / 5 / 1.5 / 0.5 W (70 V), 16 Ω, 8 Ω	60 / 30 / 15 / 3 W (100 V), 60 / 30 / 15 / 7.5 / 1.5 W (70 V), 16 Ω, 8 Ω
Sensitivity (1 W, 1 m)	90 dB	91 dB
Frequency Response	70 Hz – 20 kHz	60 Hz – 20 kHz
Mounting Hole Diameter	200 mm	250 mm
Speaker Component	Low: 12 cm cone-type; High: Balanced dome-type	Low: 16 cm cone-type, High: Dome-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 (ø x D)	230 x 229 mm	280 x 227 mm
Weight	3.7 kg	5.1 kg

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SOUND CHECK

Wall Speakers / **BS-1030B / BS-1030W**

BS-1030B

BS-1030W

290

196

150

IPX4

EASE data
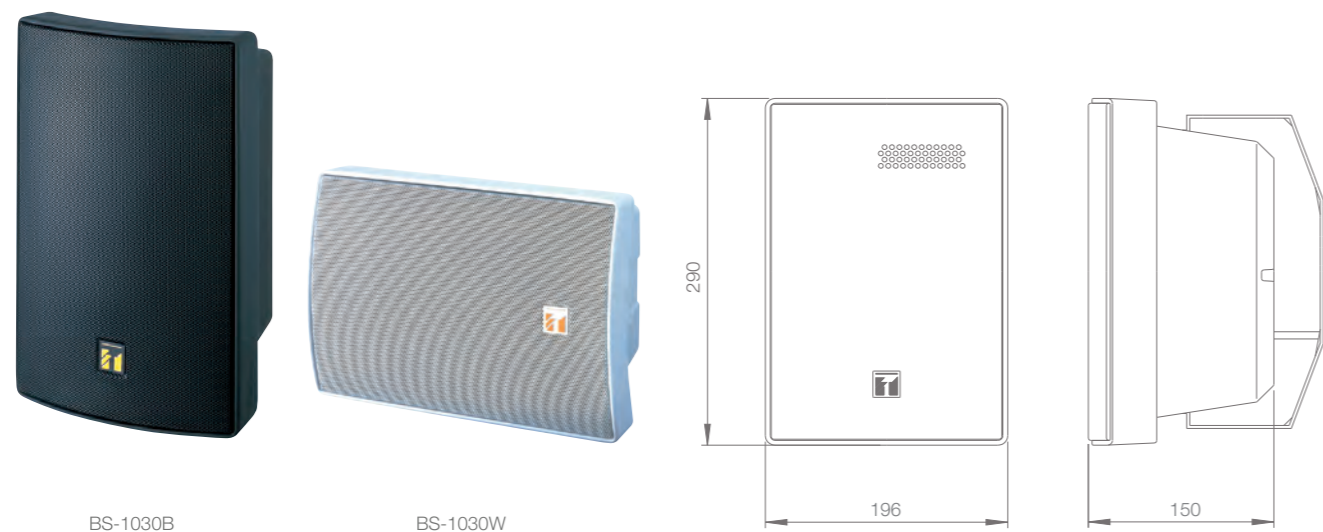
Features

- 2-way bass reflex speaker
- Cost-effective high power PA box speaker
- Various installation options
- Low impedance (8Ω) or high impedance (100V) selectable by rotary switch
- Splashproof construction in compliance with IPX4

Options

- SP-410: Wall/Ceiling Mounting Bracket
- SP-420: Flush Mounting Frame
- ST-16A: Speaker Stand

Applications

- Hotel receptions
- Shops
- Restaurants
- Boutiques
- Amusement parks
- Airports

Specifications

	BS-1030B	BS-1030W
Rated Input	30 W (100 V)	
Impedance	8 Ω or high impedance (100 V or 70 V)	
Tappings	30 / 20 / 15/ 10 / 5 W (100V), 7.5 / 5 / 2.5 W (70V)	
Sensitivity (1 W, 1 m)	90 dB	
Frequency Response	80 – 20 kHz	
Speaker Component	12 cm dynamic cone-type speaker, 2.5 cm balanced dome tweeter	
Finish	Enclosure: ABS resin, black (RAL 9011 graphite black), paint Net/Bracket: Surface treated steel plate, black (RAL 9011 graphite black), powder coating	Enclosure: ABS resin, white (RAL 9011 pure white), paint Net/Bracket: Surface treated steel plate, white (RAL 9010 pure white), powder coating
Dimensions (W x H x D)	196 × 290 × 150 mm	
Weight	2.5 kg	

Wall Speakers / **BS-1030B / BS-1030W / Accessories**

SP-410

Wall/Ceiling Mounting Bracket

Features

- Designed to mount a box speaker to a wall or surface
- Can be installed in combination with a 2-unit electrical box and can easily set or change the speaker orientation
- Finish: Base / Shaft: Stainless steel Bracket: Nickel-plated rolled steel plate
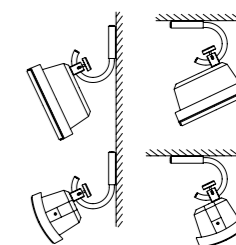
SP-420

Flush Mounting Frame

Features

- Designed to exclusively mount the BS-1030W in a wall or ceiling
- Can be easily mounted to the sueface made of the plaster board or plywood
- Finish: Base bracket: Surface treated steel plate, white paint / Shaft and Mounting clip: Nickel plated rolled steel plate

ST-16A

Speaker Stand

Features

- Lightweight, smart speaker stand
- Load capacity: 7 kg
- Finish: Aluminium, silver, mat finish / Speaker mounting bracket: Polyamide resin, black
- Weight: 1.7 kg (bracket included)

01 VOICE ALARM SYSTEMS 008–069
02 INTERCOM SYSTEM 070–093
03 SPEAKERS 094–145
04 PROSOUND 146–211
05 DISTRIBUTION 212–255
06 WIRELESS SYSTEMS 256–301
07 CONFERENCE SYSTEMS 302–323
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212–255 DISTRIBUTION 05
256–301 WIRELESS SYSTEMS 06
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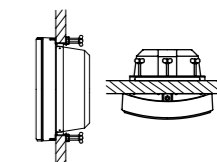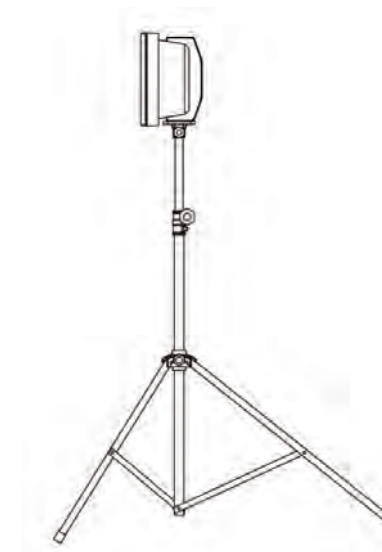
Wall Speakers / **BS-634 / BS-634T / BS-1034 / BS-1034S**

BS-634 / BS-634T / BS-1034

BS-1034S

EASE
data

BS-634 / BS-634T

- Easy and quick installation
- Attractive design based on the golden ratio
- Input impedance selector with rotary switch
- Fire resistant according to UL 94-V0

BS-1034 / BS-1034S

- 2-way speaker
- Easy and quick installation
- Attractive design based on the golden ratio
- Input impedance selector with rotary switch
- Fire resistant according to UL 94-V0

Applications

- Hotels
- Restaurants
- Conference rooms
- Department stores

Specifications

	BS-634	BS-634T	BS-1034	BS-1034S
Rated Input	6 W (100 V)		10 W (100 V)	
Tappings	6 / 3 W (100 V), 3 / 1.5 W (70 V)	6 W (100 V), 3 W (70 V)	10 / 5 / 3 / 1 W (100 V), 10 / 5 / 2.5 / 1.5 / 0.5 W (70 V)	
Sensitivity (1 W, 1 m)	90 dB			
Frequency Response	120 – 18 kHz		120 Hz – 20 kHz	
Speaker Component	12 cm cone-type		Low: 12 cm cone-type, High: Balanced dome-type	
Finish	Enclosure: HIPS resin, off-white / Grille: Surface-treated steel plate net, off-white		Enclosure: HIPS resin, off-white Grille: Steel plate net, off-white	Enclosure: HIPS resin, silver Grille: Steel plate net, silver
Dimensions (W x H x D)	210 × 330 × 80 mm			
Weight	1.3 kg		1.4 kg	

210 / 330 / 80

Wall Speakers / **BS-678 / BS-678B / BS-678T / BS-678BT / BS-680F**

250 / 190

EASE
data

BS-678 / BS-678T

BS-678B / BS-678BT

310 / 190 / 87.2 / 24 / 60.2

BS-680F

EASE
data

BS-678

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

BS-680F

- Surface or flush-mounting
- High sound quality & sound pressure
- Bridge wiring possible

Applications

- Shopping centers
- Office buildings
- Hotels
- Retail stores
- Hospitals

Specifications

	BS-678	BS-678B	BS-678T	BS-678BT	BS-680F
Rated Input	6 W (100 V)				
Tappings	6 / 3 / 1.5 / 0.8 W (100 V), 3 / 1.5 / 0.8 / 0.4 W (100 V)				
Sensitivity (1 W, 1 m)	94 dB				
Attenuator	-		Off, -12 dB, -6 dB, 0 dB		-
Frequency Response	150 Hz – 20 kHz				
Speaker Component	16 cm double cone-type				
Finish	Enclosure: Wood, off-white Grille: Surface-treated steel plate net, off-white	Enclosure: Wood, black Grille: Surface-treated steel plate net, black	Enclosure: Wood, off-white Grille: Surface-treated steel plate net, off-white	Enclosure: Wood, black Grille: Surface-treated steel plate net, black	Enclosure: Steel plate, off-white/Grille: Stainless steel punching net, off-white (RAL 9010 or equivalent colour)
Dimensions (W x H x D)	250 × 190 × 110 mm				310 x 190 x 87.2 mm
Weight	1.7 kg				2.6 kg

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02 INTERCOM SYSTEM 070–093

03 SPEAKERS 094–145

04 PROSOUND 146–211

05 DISTRIBUTION 212–255

06 WIRELESS SYSTEMS 256–301

07 CONFERENCE SYSTEMS 302–323

SOUND CHECK

Wall Speakers / **BS-633A / BS-633AT**

BS-633A

BS-633AT

173

195

101

81

EASE data

EASE data
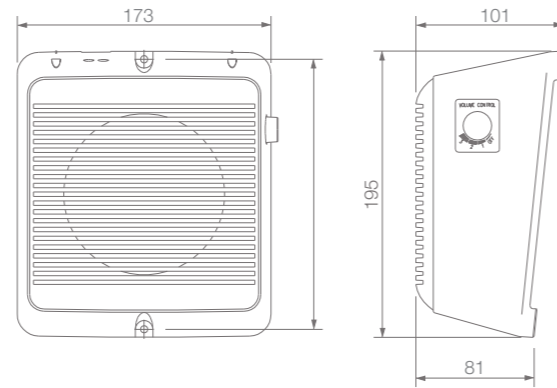
Features

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

Applications

- Shopping centers
- Office buildings
- Hotels
- Schools
- Retail stores
- Hospitals

Specifications

	BS-633A	BS-633AT
Rated Input	6 W (100 V)	
Tappings	6 / 3 / 1 W (100 V), 3 / 1.5 / 0.5 W (70 V)	6 / 3 W (100 V), 3 / 1.5 W (70 V)
Sensitivity (1 W, 1 m)	91 dB	
Frequency Response	120 – 15 kHz	
Speaker Component	12 cm cone-type	
Finish	Enclosure: ABS resin, off-white / Rear board: Hard board	
Dimensions (W x H x D)	173 × 195 × 101 mm	
Weight	780 g	810 g

Wall Speakers / **PC-391 / PC-391T**

PC-391

PC-391T

115

162

115

162
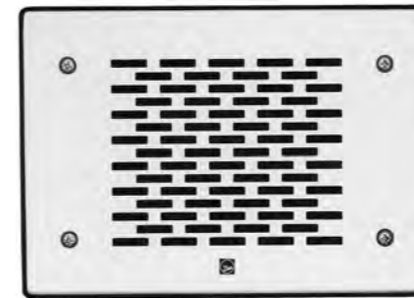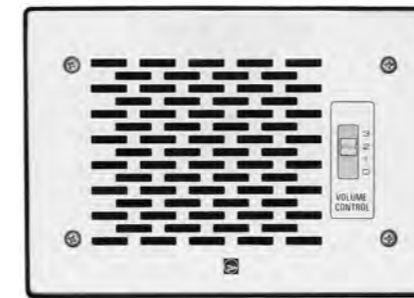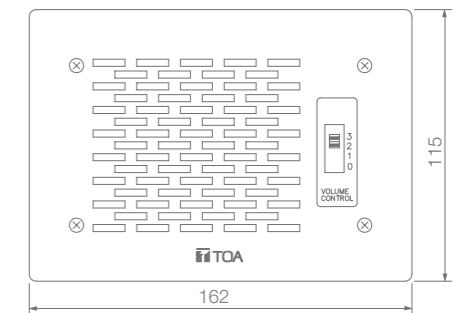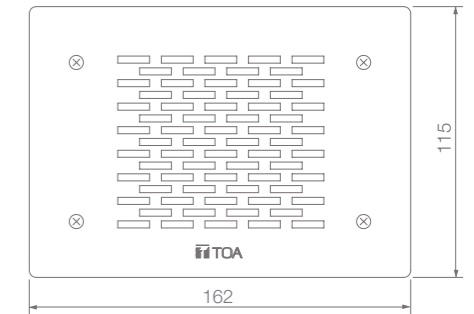
Features

- Small rectangular speaker
- Stainless steel baffle
- Flush-mounting
- PC-391T with attenuator

Options

- YC-150E: Back Box (Non-RoHS product)

Applications

- Hotels
- Hospital rooms
- Reception counters

Specifications

	PC-391	PC-391T
Rated Input	3 W (100 V)	
Attenuator	-	Off, -12 dB, -6 dB, 0 dB
Sensitivity (1 W, 1 m)	86 dB	
Frequency Response	150 Hz – 18 kHz	
Speaker Component	7.7 cm cone-type	
Finish	Baffle: Stainless steel / Grille: Aluminium, silver	
Dimensions (W x H x D)	162 × 115 × 43 mm (excluded the projected screw heads)	162 × 115 × 47 mm (excluded the projected screw heads)
Weight	560 g	600 g

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Wall Speakers / **BS-4W**

EASE data   IPX2
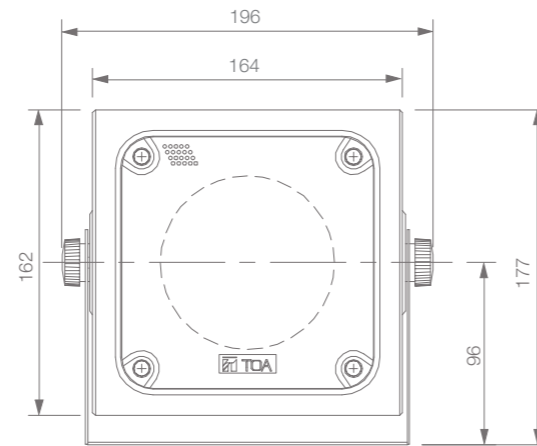
Features

- Splashproof compact speaker
- 10 cm full range speaker unit
- Meets IP X2 water protection

Applications

- Under the eaves (not directly exposed to rain or waterdrop
- Highly humid locations (locker rooms of swimming pools and bathrooms)

Specifications

	BS-4W
Rated Input	5 W
Rated Impedance (100 V)	2 kΩ (5 W)
Sensitivity (1 W, 1 m)	87 dB
Frequency Response	100 Hz – 12 kHz
Speaker Component	10 cm cone-type
Finish	Enclosure: Polypropylene, gray paint / Grille: Aluminium punching net, silver gray, paint / Mounting bracket: Rolled steel plate, gray, paint
Dimensions (W x H x D)	196 x 177 x 160 mm
Weight	1.5 kg

Pendant Speakers / **PE-64 / PE-304**

EASE data
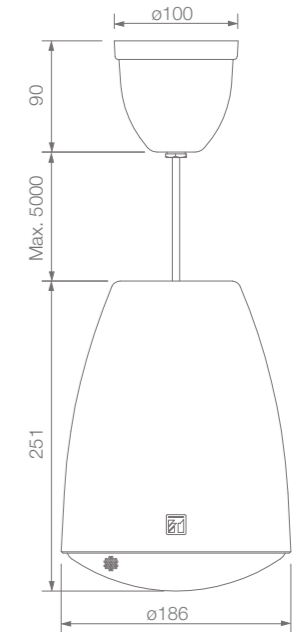
Features

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

Applications

- Supermarkets
- Shopping malls
- Lobby
- Rooms without suspended ceilings

Specifications

	PE-64	PE-304
Rated Input (100 V)	6 W	30 W
Tappings	6 / 3 / 1 W (100 V), 3 / 1.5 / 0.5 W (70 V)	30 / 20 / 15 / 10 / 5 W (100 V), 30 / 20 / 15 / 10 / 5 W (70 V)
Sensitivity (1 W, 1 m)	90 dB	91 dB
Frequency Response	100 Hz – 18 kHz	70 Hz – 20 kHz
Finish	Enclosure: HIPS resin, off-white / Grille: Surface-treated steel plate net, off-white	
Dimensions (ø x D)	186 x 251 mm	
Weight	1.5 kg	2.1 kg

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SOUND CHECK

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

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

275
ø186

EASE data
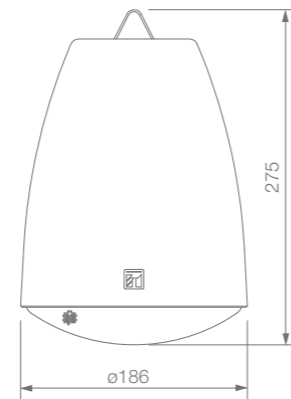
Features

- Stylish design inspired by modern lighting fixtures
- Ideally suited for BGM & announcements
- 8 Ω and 25 V/70 V/100 V operation
- Input impedance is easily changed with a rotary switch on the top of the speaker
- With speaker cable, GRIPPLE® hanging wire & safety wire pre-attached, for faster, easier and more secure installation
- UL Code: UL1480 UUMW, ULC-S541

Applications

- Airports
- Factories
- Shopping malls
- Office buildings

Specifications

	PE-304BU / PE-304WU	PE-604BU / PE-604WU
Rated Input	30 W	60 W
Tappings	30 / 10 / 3 / 1.3 W (100 V), 30 / 15 / 5 / 1.5 / 0.6 W (70 V)	60 / 30 / 15 / 3 W (100 V), 60 / 30 / 15 / 7.5 / 1.5 W (70 V)
Sensitivity (1 W, 1 m)	90 dB (330 Hz – 3.3 kHz, pink noise)	
Frequency Response	95 Hz – 20 kHz (–10 dB)	110 Hz – 20 kHz (–10 dB)
Speaker Component	12 cm cone-type + balanced-dome tweeter (coaxial)	
Finish	Enclosure: HIPS resin, Grille: Surface-treated steel plate mesh, paint PE-304BU / PE-604BU: black; PE-304WU / PE-604WU: white (RAL 9010 or equivalent)	
Dimensions (ø x D)	186 x 275 mm (cable not included)	
Weight	2 kg (unit only)	2.9 kg (unit only)

Projection Speakers / **PJ-100W / PJ-200W**

ø140
195
200
130
160
108
PJ-100W

ø180
250
255
165
200
135
PJ-200W

EASE data
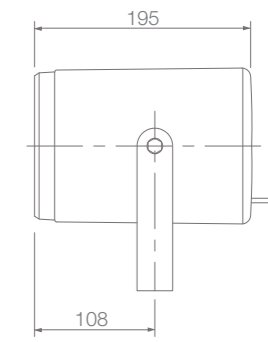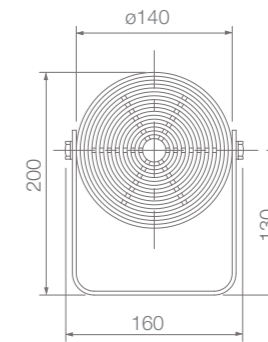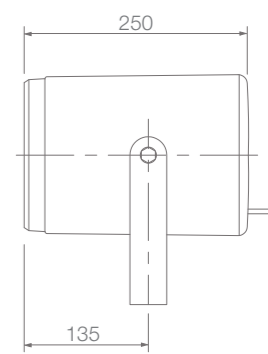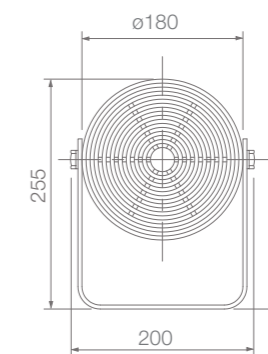
Features

- Wide range speaker
- Ideally suited for Information broadcast

Applications

- Railroad stations
- Locations where different announcements are made in close proximity

Specifications

	PJ-100W	PJ-200W
Rated Input (100 V)	10 W	20 W
Tappings	10 / 5 / 2.5 W (100 V), 10 / 5 / 2.5 / 1.25 W (70 V)	20 / 10 / 5 W (100 V), 20 / 10 / 5 / 2.5 W (70 V)
Sensitivity (1 W, 1 m)	92 dB	95 dB
Frequency Response	65 Hz – 15 kHz	50 Hz – 20 kHz
Finish	Cabinet, Cover: ABS Resin, off-white / Bracket: SPCC, off-white	
Dimensions (W x H x D)	160 x 200 x 195 mm	200 x 255 x 250 mm
Weight	1.8 kg	2.5 kg

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Projection Speakers / **PJ-64 / PJ-304**

(Horizontal) 360°

Ø72
369
251
Ø186

EASE data
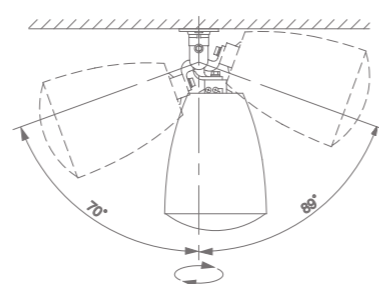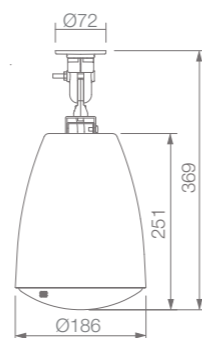
Features

- Stylish and outstanding design inspired by the finest lighting fixtures
- Flexible speaker direction adjustment with accessory brackets
- Repaintable
- Input impedance easily changeable

Applications

- For buildings with high noise level

Specifications

	PJ-64	PJ-304
Rated Input	6 W (100 V)	30 W (100 V)
Tappings	6 / 3 / 1 W (100 V), 3 / 1.5 / 0.5 W (70 V)	30 / 20 / 15 / 10 / 5 W (100 V), 30 / 20 / 15 / 10 / 5 W (70 V)
Sensitivity (1 W, 1 m)	90 dB	91 dB
Frequency Response	100 Hz – 18 kHz	70 Hz – 20 kHz
Speaker Component	12 cm cone-type	12 cm cone-type + balanced dome tweeter
Finish	Enclosure: HIPS resin, off-white / Grille: Surface-treated steel plate net, off-white	
Dimensions (ø x D)	186 × 369 mm	
Weight	1.5 kg	2.1 kg

Projection Speakers / **CS-64 / CS-154 / CS-304**

233
208
146
224
121.5
Ø172
Ø168
600

EASE data

CS-64

IP65 EASE data

230
172
366
37
51 51
236
257
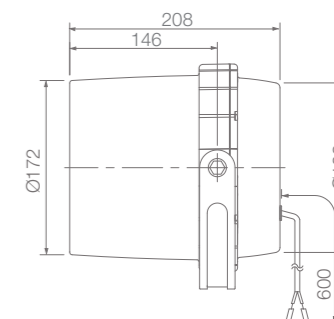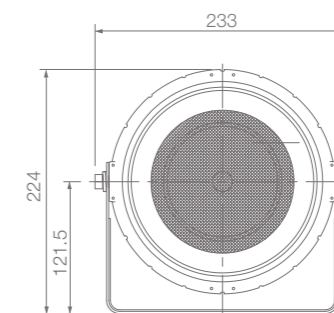
CS-154 / CS-304
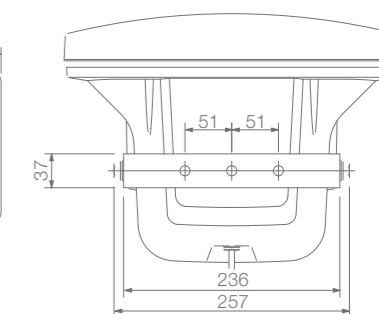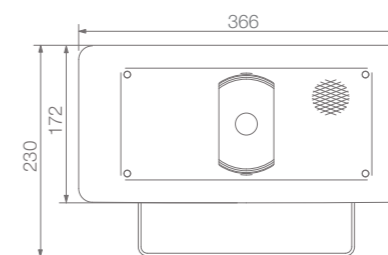
CS-64 / CS-154 also available as EN certified version (page 64)

CS-64

- Round wide-range speaker for paging, background music and tone signaling distribution
- Exponential horn improves directivity characteristics and ensure uniform and clear sound dispersion
- Wide temperature range: -20 to +55 °C
- Weatherproof polyurethane resin paint and impact-proof lightweight ABS resin enclosure
- Stainless steel hardware protects the speaker from corrosion

CS-154 / CS-304

- Rectangular wide-range speaker for voice paging, background music and tone signaling distribution
- Constant directivity horn improves directivity characteristics and ensure uniform and clear sound dispersion
- Wide temperature range: -20 to +55 °C
- Weatherproof polyurethane resin paint and impact-proof lightweight ABS resin enclosure
- Stainless steel hardware protects the speaker from corrosion

Applications

- Stations
- Park houses
- Plants
- Stadiums
- Swimming pools
- Outdoor areas

Specifications

	CS-64	CS-154	CS-304
Rated Input	6 W (100 V)	15 W (100 V)	30 W (100 V)
Tappings	6 / 3 / 1 W (100 V), 6 / 3 / 1.5 / 0.5 W (70 V)	15 / 10 / 5 W (100 V), 15 / 7.5 / 5 / 2.5 W (70 V)	30 / 20 / 10 W (100 V), 30 / 15 / 10 / 5 W (70 V)
Sensitivity (1 W, 1 m)	96 dB	97 dB	98 dB
Frequency Response	130 Hz – 13 kHz	150 Hz – 15 kHz	120 Hz – 15 kHz
Speaker Component	12 cm cone-type (Treated for splash proof)		
Finish	Horn, cover: ABS resin, off-white, paint Bracket: Stainless steel; Punched net: Surface treated steel plate, dark-gray, powder coating	Horn, cover: ABS resin, off-white, paint / Bracket: Stainless steel / Net: Aluminium, gray	
Dimensions (W x H x D)	233 × 224 × 208 mm	366 × 230 × 272 mm	
Weight	1.5 kg	2.8 kg	3.1 kg

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Horn Speakers / **SC-651 / SC-P620-EB**

SC-651

430
297.5
327

SC-P620-EB

292
234
3
280
212
130
94

IP65
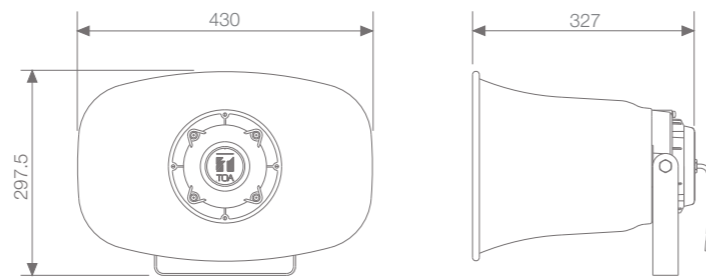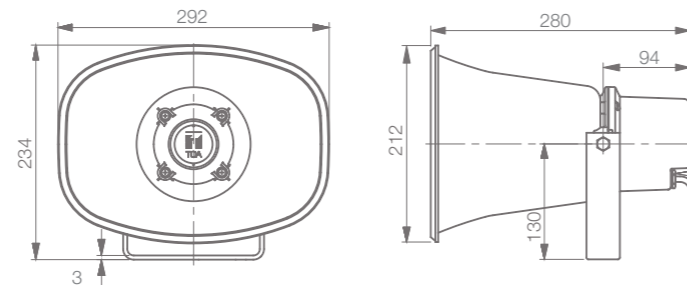
SC-651

- Anti-shock construction
- High sound pressure level
- Including 600 mm cable

SC-P620-EB

- Integrated 20 W power amplifier which utilises latest Class D technology
- Switchable Gain: 8 dB, 16 dB, 24 dB & 32 dB
- Internal volume control to allow on-site tuning

Options

- AD-5000-2: Adaptor

Applications

- SC-651: Manufacturing plants, vehicles
- SC-P620-EB: Warehouses, production halls, manufacturing plants

Specifications

	SC-651	SC-P620-EB
Rated Input	50 W	15 W
Rated Impedance	16 Ω	-
Sensitivity (1 W, 1 m)	109 dB	113 dB
Frequency Response	250 Hz – 6 kHz	250 Hz – 10 kHz
Finish	Colour: ivory, dark brown painted steel bracket / Aluminium and ABS resin construction with special powder coating	Off-white (RAL 9010 or equivalent)
Dimensions (W x H x D)	430 x 297.5 x 327 mm	292 x 234 x 280 mm
Weight	3.4 kg	1.8 kg

Horn Speakers / **SC-240**

580
654
598
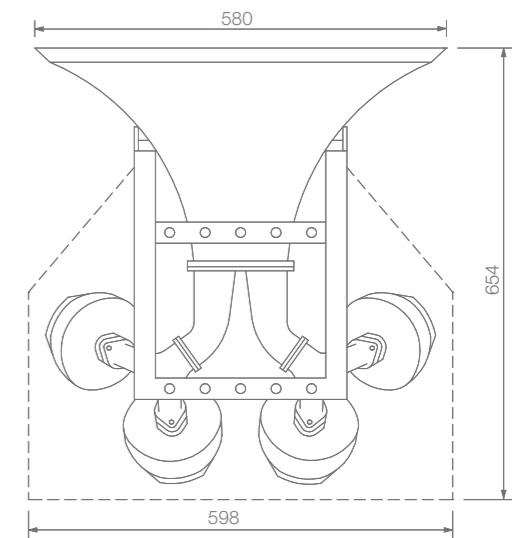
SC-240

- Ideal for signal and voice transmission over long distances or in noisy environments
- Uniform dispersion for intelligible sound
- High sound pressure level
- Wide directivity
- Horn vertically adjustable
- Directional speaker
- Bracket, driver units included
- Non-RoHS product

Options

- TM-60T: 60 W Transformer for 100 V lines (secondary impedances: 4/8/16 Ω), weight 1.3 kg, non-RoHS product

Applications

- Large industrial areas
- Beaches (life guard)

Specifications

	SC-240
Rated Input	240 W
Rated Impedance	8 Ω x 4
Sensitivity (1 W, 1 m)	107 dB
Frequency Response	250 Hz – 5 kHz
Finish	Horn: Aluminium die casting, ivory / Cover: Surface treated steel plate, ivory / Driver unit case: Weatherproof ABS resin / Bracket: Equal angle steel, ivory
Dimensions (W x H x D)	598 x 251 x 654 mm
Weight	28 kg

01 008–069 VOICE ALARM SYSTEMS
02 070–093 INTERCOM SYSTEM
03 094–145 SPEAKERS
04 146–211 PROSOUND
05 212–255 DISTRIBUTION
06 256–301 WIRELESS SYSTEMS
07 302–323 CONFERENCE SYSTEMS
SOUND CHECK

Horn Speakers / **SC-610 / SC-615 / SC-630**

SC-610

SC-615

SC-630

172 188
161

222 234
179

285 277
227

IP65 | EASE data
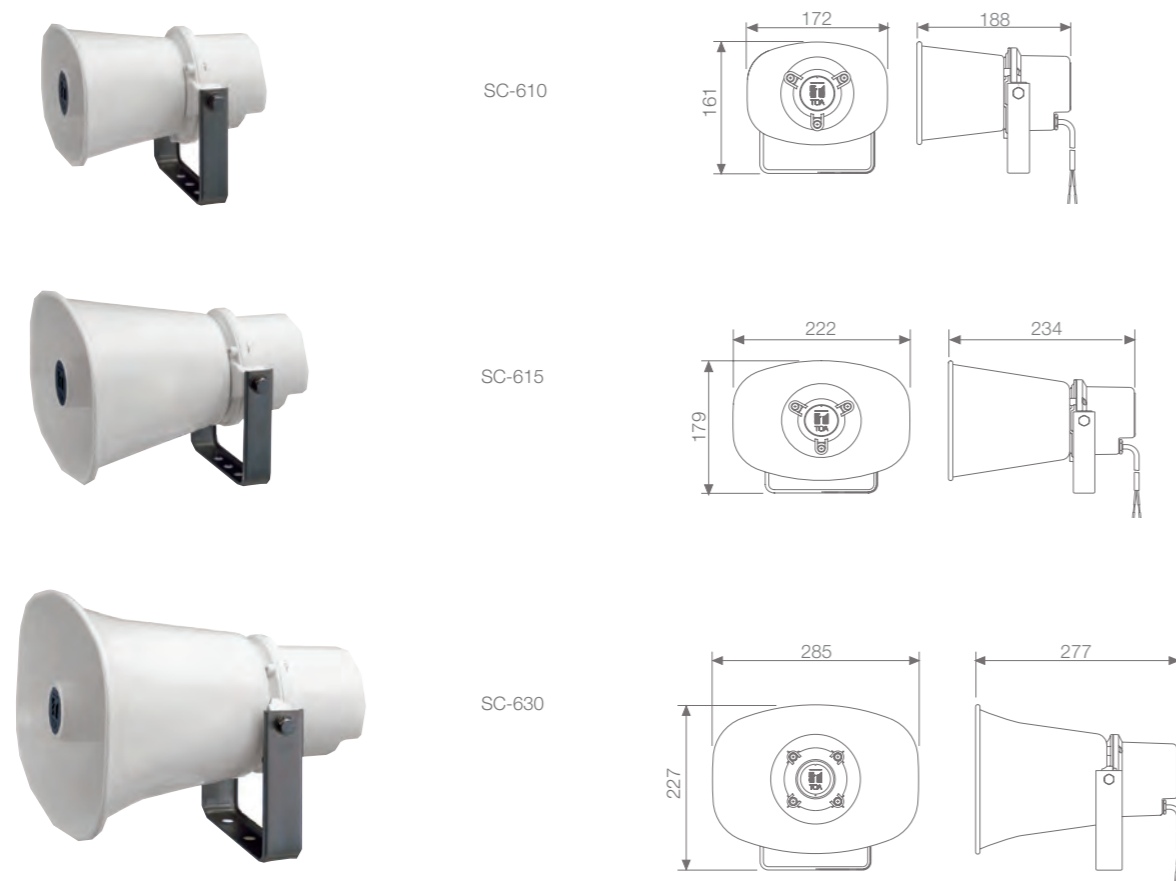
SC-615 / SC-630 also available as EN certified version (page 63)

Features

- Very rugged speaker with durable construction ensures long term reliable operation
- High quality sound
- Very high SPL
- Easy impedance selection through switch
- Low impedance 8 Ω
- Shock resistant oval horn

Applications

- Specially for outdoor use e.g. in train stations, parkings

Specifications

	SC-610	SC-615	SC-630
Rated Input	10 W	15 W	30 W
Rated Impedance	8 Ω		
Sensitivity (1 W, 1 m)	110 dB	112 dB	113 dB
Frequency Response	315 Hz – 12.5 kHz	280 Hz – 12.5 kHz	250 Hz – 10 kHz
Finish	Horn flare: Aluminum, off-white, powder coating / Reflector horn and rear cover: ABS resin, off-white/ Bracket, screws and bolts: Stainless steel		
Dimensions (W x H x D)	172 x 161 x 188 mm	222 x 179 x 234 mm	285 x 227 x 277 mm
Weight	1 kg	1.1 kg	1.7 g

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01 008–069 VOICE ALARM SYSTEMS
02 070–093 INTERCOM SYSTEM
03 094–145 SPEAKERS
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06 256–301 WIRELESS SYSTEMS
07 302–323 CONFERENCE SYSTEMS
SOUND CHECK

Horn Speakers / **SC-610M / SC-615M / SC-630M**
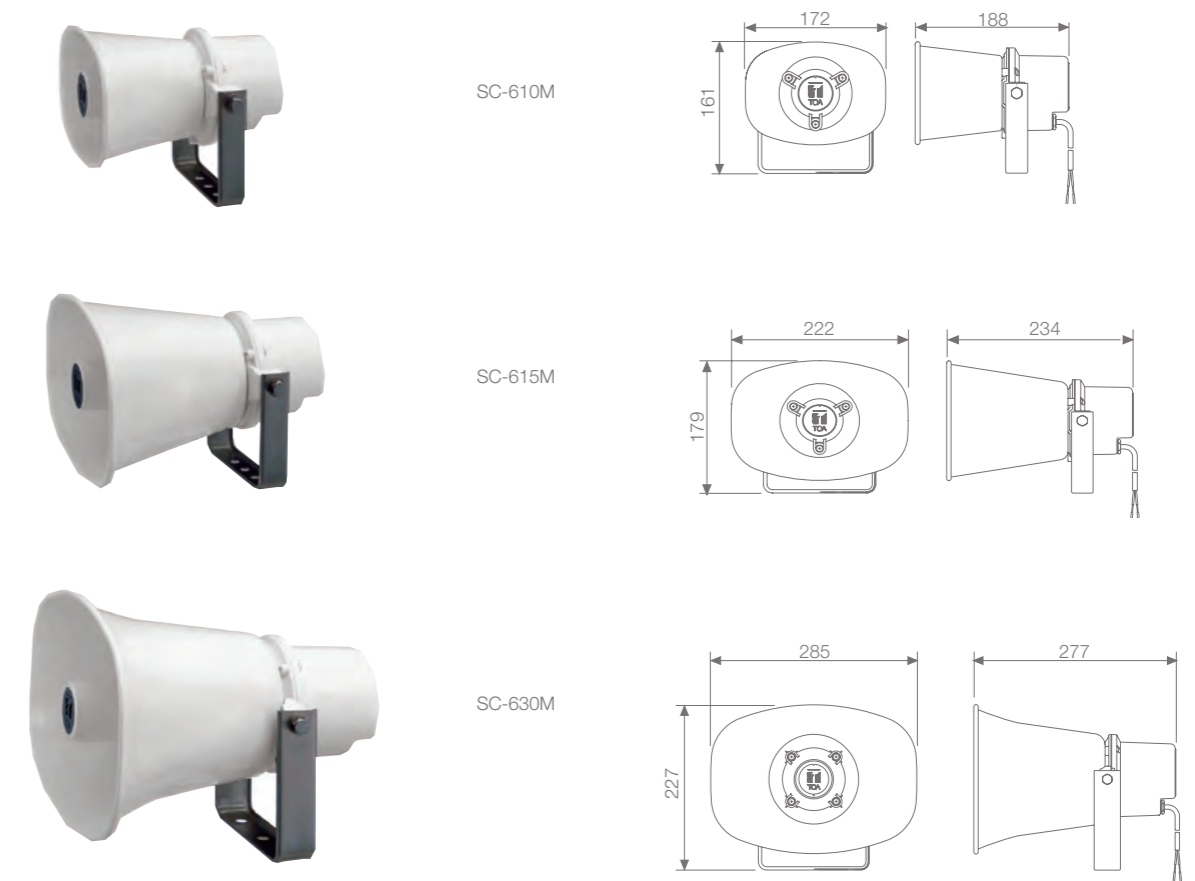
SC-610M

SC-615M

SC-630M

172 188
161

222 234
179

285 277
227

IP65 | EASE data

Features

- Very rugged speaker with durable construction ensures long term reliable operation
- High quality sound
- High SPL
- Easy impedance selection through switch
- High impedance 100 V line
- Shock resistant oval horn

Applications

- Specially for outdoor use e.g. in train stations, parkings

Specifications

	SC-610M	SC-615M	SC-630M
Rated Input	10 W	15 W	30 W
Tappings	10 / 5 / 3 / 1 W (70 V) 10 / 5 / 2.5 / 1.5 / 0.5 W (100 V)	15 / 10 / 5 / 3 W (70 V) 15 / 7.5 / 5 / 2.5 / 1.5 W (100 V)	30 / 15 / 10 / 5 W (70 V) 30 / 15 / 7.5 / 5 / 2.5 W (100 V)
Sensitivity (1 W, 1 m)	110 dB	112 dB	113 dB
Frequency Response	315 Hz – 12.5 kHz	280 Hz – 12.5 kHz	250 Hz – 10 kHz
Finish	Horn flare: Aluminum, off-white, powder coating / Reflector horn and rear cover: ABS resin, off-white/ Bracket, screws and bolts: Stainless steel		
Dimensions (W x H x D)	172 x 161 x 188 mm	222 x 179 x 234 mm	285 x 227 x 277 mm
Weight	1.2 kg	1.3 kg	2 kg

01 VOICE ALARM SYSTEMS 008–069
02 INTERCOM SYSTEM 070–093
03 SPEAKERS 094–145
04 PROSOUND 146–211
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SOUND CHECK

Horn Speakers / **DH-110 / DH-120**

Ø518
466 320
968
198
255

Ø518
466 320
884
114
255
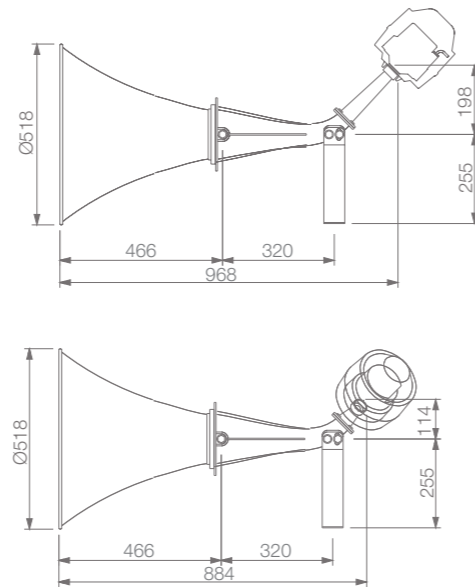
Features

- Ideal for long distance voice broadcasting
- Provides clear, highly articulate sound in high noise environments
- Ultra high sound pressure level
- For use with drivers TU-631, TU-651 or TU-631M / TU-651M (optional)
- DH-110 for 1 driver, DH-120 for 2 drivers

Options

- TU-631, TU-651: Drivers 30 or 50W for low impedance
- TU-631M, TU-651M: Drivers 30 or 50W for high impedance

Applications

- Construction sites
- Places with large gatherings of people

Specifications

	DH-110	DH-120
Sensitivity (1 W, 1 m)	110 dB (with driver)	
Frequency Response	180 Hz – 6 kHz (with driver)	
Finish	Horn: Aluminium, ivory, powder coating / Bracket: Steel plate, ivory, powder coating	
Dimensions (W x H x D)	518 x 968 mm (w/o driver)	518 x 884 mm (w/o driver)
Weight	5.3 kg	

Horn-Array Speaker / **HA-1010-EB**

IPX5

140.5
87.5
167
1233
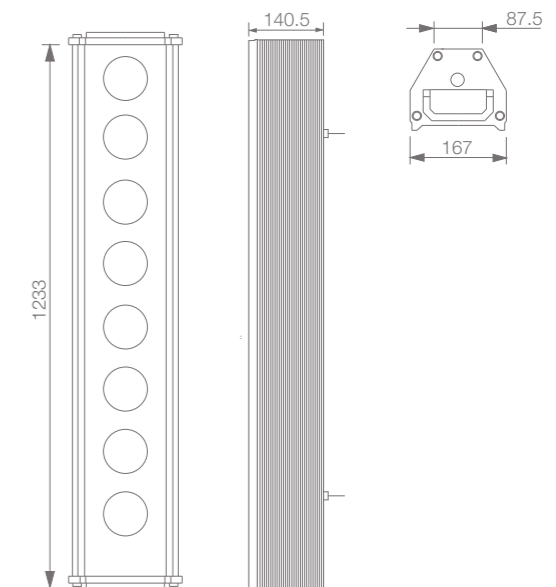
Features

- Long-range sound coverage two times further than conventional horn speakers
- Better speech intelligibility thanks to horn array technology
- Compact and lightweight design
- Wide temperature range: -20 to +55 °C

Applications

- Airports
- Skiing locations
- Factories
- Public squares
- Leisure parks

Specifications

	HA-1010-EB
Rated Input	50 W (100 V)
Sensitivity (1 W, 1 m)	114 dB
Frequency Response	350 Hz – 7 kHz
Speaker Unit	Horn speaker unit x 8
Finish	Case, Panel: Aluminium, salt-resistant, paint, gray / Front grille: Aluminium, black / Bracket: Stainless steel, paint gray
Dimensions (W x H x D)	167 x 1,233 x 140.5 mm
Weight	13.5 kg

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SOUND CHECK

Horn Speakers / **TC-615 / TC-615M / TC-631 / TC-631M**

TC-615 / TC-615M

Ø400
376
288

TC-631 / TC-631M

Ø500
463
375

IP65   EASE data
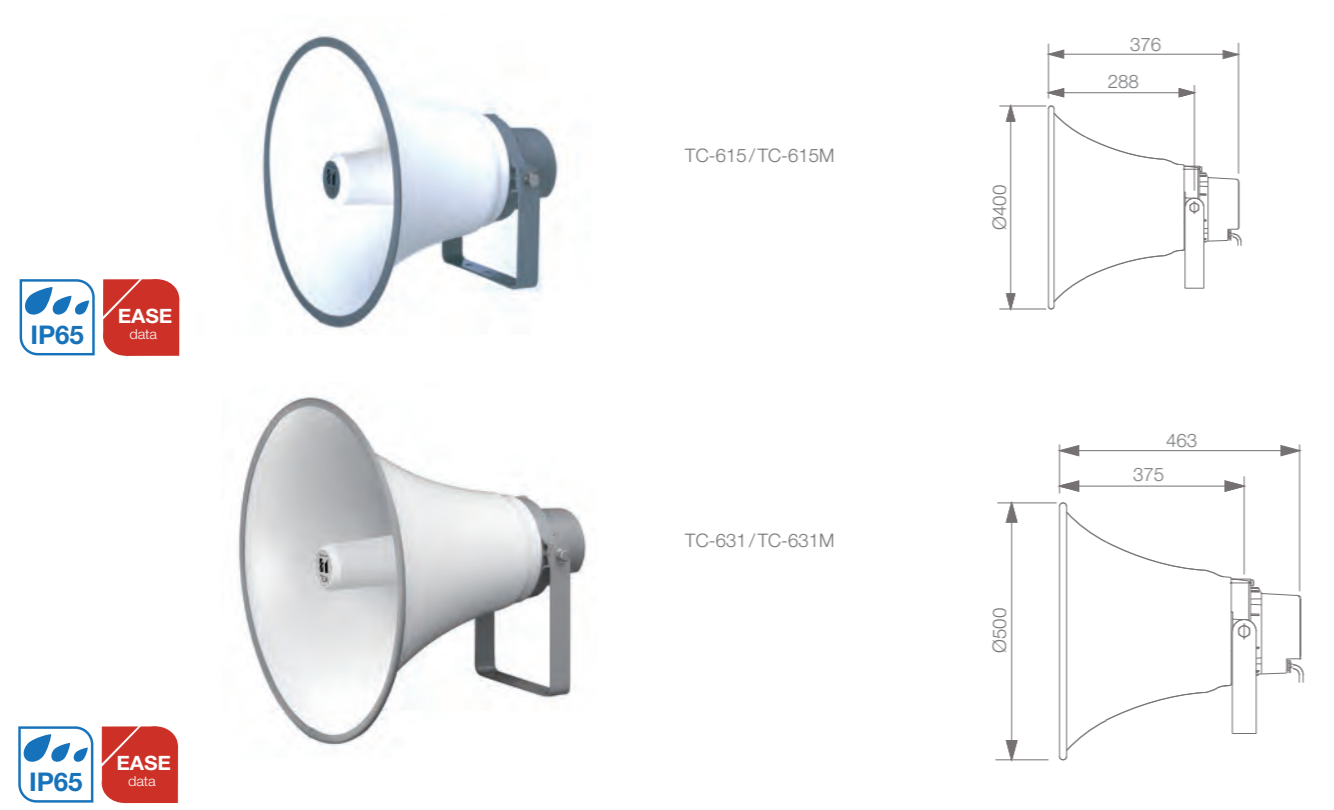
Features

- Both high-impedance (70V/100V lines) models and low-impedance (8Ω/15W model, 16Ω/30W model) models available
- Two power ratings: 15W and 30W
- Stainless steel hardware (screws, bolts, nuts), and powder-coated horn and bracket ensure superb weatherproofing and corrosion-resistance
- Shock-resistant aluminum round horn
- TC-615M / TC-631M with 600mm cable

Applications

- Plants
- Park houses
- Stations
- Stadiums
- Swimming pools
- Outdoor areas

Specifications

	TC-615	TC-631	TC-615M	TC-631M
Rated Input	15 W	30 W	15 W	30 W
Rated Impedance	8 Ω	16 Ω	-	-
Tappings			15 / 10 / 5 / 3W (100V) 15 / 7.5 / 5 / 2.5 / 1.5W (70V)	30 / 15 / 10 / 5W (100V) 30 / 15 / 7.5 / 5 / 2.5W (70V)
Sensitivity (1 W, 1 m)	108 dB	110 dB	108 dB	110 dB
Frequency Response	250 Hz – 7 kHz	200 Hz – 6 kHz	250 Hz – 7 kHz	200 Hz – 6 kHz
Finish	Horn flare: aluminum, off-white, powder coating / Reflector horn: ABS resin, off-white / Bracket holder: aluminum, gray, powder coating / Bracket: steel, gray, powder coating / Rear cover: ABS resin, gray / Screw and bolts: stainless steel			
Dimensions (ø x D)	400 x 376 mm	500 x 463 mm	400 x 376 mm	500 x 463 mm
Weight	3 kg	4.1 kg	3.2 kg	4.5 kg

Horn Speakers / **TC-651M**

Ø400
376
288
600
100

IP65   EASE data
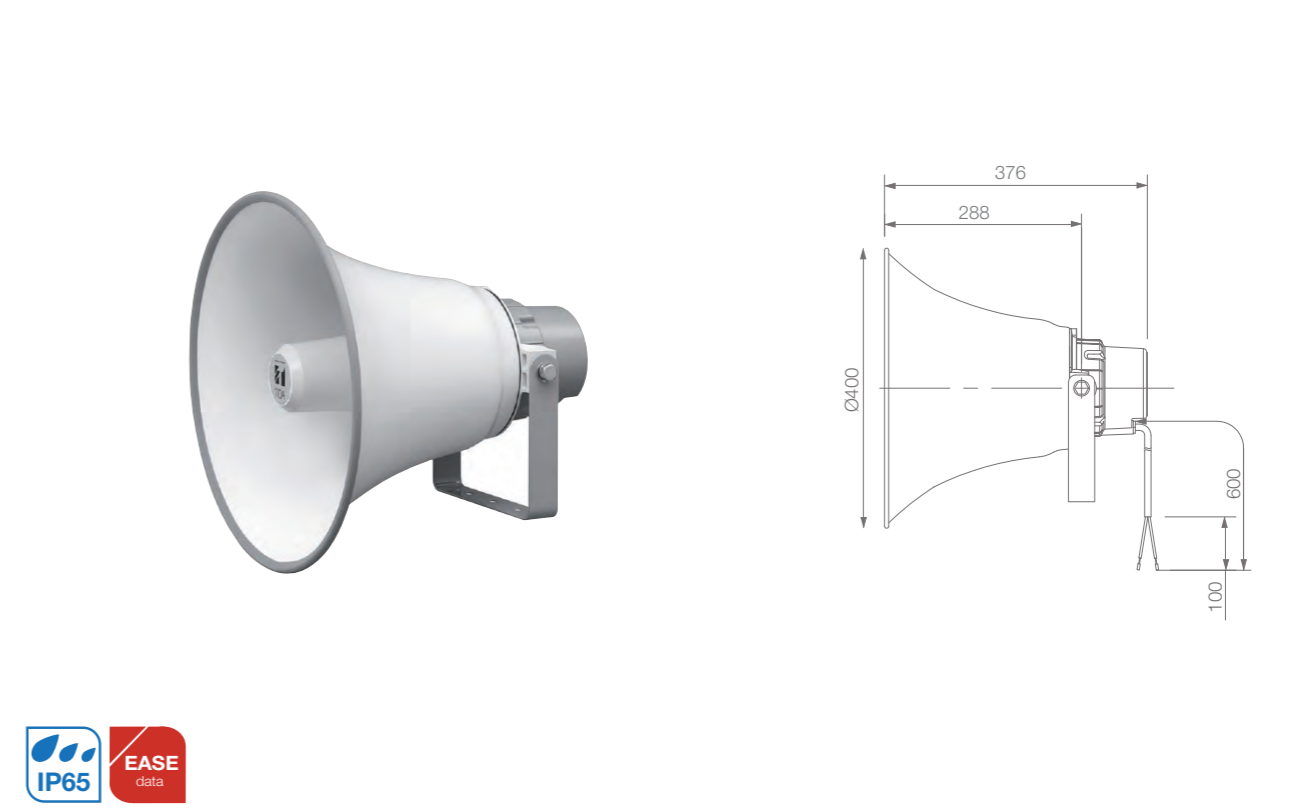
Features

- High durability, high heat-resistance and improved low frequency sound thanks to polyimide diaphragm
- More than 100 hours of operation at 50 W in continuous load test employing test signal that meets IEC 60268-1: 1985 standard
- Stainless steel hardware (screws, bolts, nuts), and powder-coated horn and bracket for weatherproofing and corrosion-resistance
- Shock-resistant aluminum round horn

Applications

- Plants
- Park houses
- Stations
- Stadiums
- Swimming pools
- Outdoor areas

Specifications

	TC-651M
Rated Input	50 W
Tappings	50 / 30 / 15W (100V), 50 / 25 / 15 / 7.5W (70V)
Sensitivity (1 W, 1 m)	111 dB
Frequency Response	200 Hz – 6 kHz
Finish	Horn flare: aluminum, off-white, powder coating / Reflector horn: ABS resin, off-white / Bracket holder: aluminum, gray, powder coating / Bracket: steel, gray, powder coating / Rear cover: ABS resin, gray / Screw and bolts: stainless steel
Dimensions (ø x D)	400 x 376 mm
Weight	4 kg

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Horn Speakers / **TP-M15D / TP-M15E**

TP-M15D

Ø242
130
258
368
1200
110

TP-M15E

Ø392
197
365
37
1200
110
475

EASE data
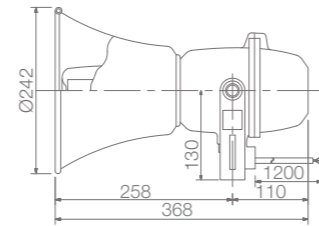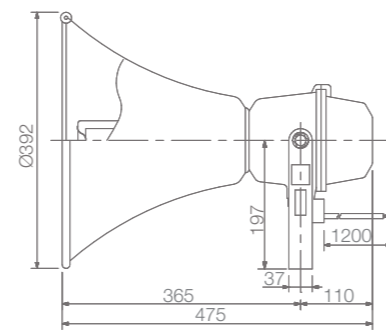
Features

- Explosion-proof according to eG4 Standard (JIS-C0903)
- Aluminium horn
- Excellent frequency response
- High sound pressure level
- Mounting brackets are supplied for easy installation
- TP-M15D: Non-RoHS product

Applications

- For hazardous and explosion sensitive areas

Specifications

	TP-M15D	TP-M15E
Rated Input	15 W	
Tappings	15 / 10 / 5 W (100 V)	
Sensitivity (1 W, 1 m)	104 dB	
Frequency Response	350 Hz – 4.5 kHz	300 Hz – 5.5 kHz
Finish	Horn: Ivory / Others: Dark brown / Bracket materials: Surface zinc treated steel plate	
Dimensions (ø x D)	242 x 368 mm	392 x 475 mm
Weight	4.3 kg	4.9 kg

Horn Speakers / **TH-650 / TH-660**

TH-650

394
Ø500

TH-660

425
Ø600

IP65
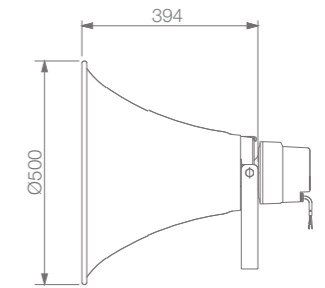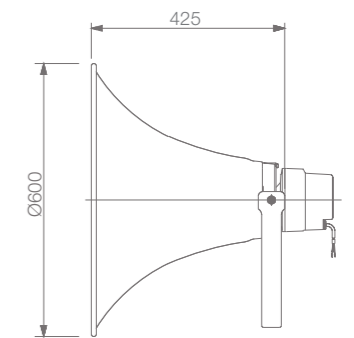
Features

- Weatherproof construction for outdoor use
- Durable construction provides reliable operation over a long time
- Round shape ensures high speech clarity and sound quality and symmetrical sound dispersion - also suitable for music reproduction
- Shock-resistant
- Aluminium horn with durable powder coating
- For use with drivers TU-631, TU-651 or TU-631M / TU-651M (optional)

Options

- TU-631, TU-651: Drivers 30 or 50 W for low impedance
- TU-631M, TU-651M: Drivers 30 or 50 W for high impedance
- UC-200A: Driver Unit Cover

Applications

- Train stations
- Ships

Specifications

	TH-650	TH-660
Sensitivity (1 W, 1 m)	110 dB (when operated with a driver)	
Driver Coupling	1 3/8 18 threads (inch screw)	
Frequency Response	200 Hz – 6 kHz (when operated with a driver)	
Finish	Off-white, horn flare and flange: aluminum, powder coating / Reflector horn: ABS resin / Bracket holder: aluminum, gray, powder coating / Bracket: steel, gray, powder coating / Screws and bolts: stainless steel	
Dimensions (ø x D)	500 x 394 mm	600 x 425 mm
Weight	2.9 kg	3.6 kg

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Driver Units for Horn Speakers / **TU-631 / TU-631M / TU-651 / TU-651M**

TU-631 / TU-631M

Features

- Both high-impedance (70 V / 100 V lines) models and low-impedance (16 Ω) models available
- Power rating: 30 W
- Frequency Response: 150 Hz – 6 kHz
- Input impedance selector on high-impedance models facilitates input impedance matching from the outside
- IP65 certified weatherproof construction

Options

- UC-200A: Driver Unit Cover

Matching Speakers

- DH-110 / DH-120
- TH-650 / TH-660

IP65

TU-651 / TU-651M

Features

- Both high-impedance (70 V / 100 V lines) models and low-impedance (16 Ω) models available
- Power rating: 50 W
- Frequency Response: 150 Hz – 6 kHz
- Input impedance selector on high-impedance models facilitates input impedance matching from the outside
- IP65 certified weatherproof construction

Options

- UC-200A: Driver Unit Cover

Matching Speakers

- DH-110 / DH-120
- TH-650 / TH-660

IP65

UC-200A

Features

- Driver Unit Cover
- Glass fiber-mixed unsaturated polyester resin to protect the driver unit from several weather conditions

Specifications

	TU-631	TU-651	TU-631M	TU-651M
Rated Input	30 W	50 W	30 W	50 W
Rated Impedance	16 Ω	16 Ω	30 / 15 / 10 / 5 W (100 V) 30 / 15 / 7.5 / 5 / 2.5 W (70 V)	50 / 30 / 15 / 5 W (100 V) 50 / 25 / 15 / 7.5 W (70 V)
Sensitivity (1 W, 1 m)	110 dB (when operated with TH-650 and TH-660)			
Frequency Response	150 Hz – 6 kHz			
Finish	Flange: Aluminum, gray, powder coating / Rear cover: ABS resin, gray / Screws: Stainless steel			
Dimensions (ø x D)	139 x 106 mm		139 x 149 mm	
Weight	1.4 kg	1.9 kg	1.9 kg	2.7 kg

Garden Speakers / **GS-302**

Ø270

335

IPX4   **EASE** data
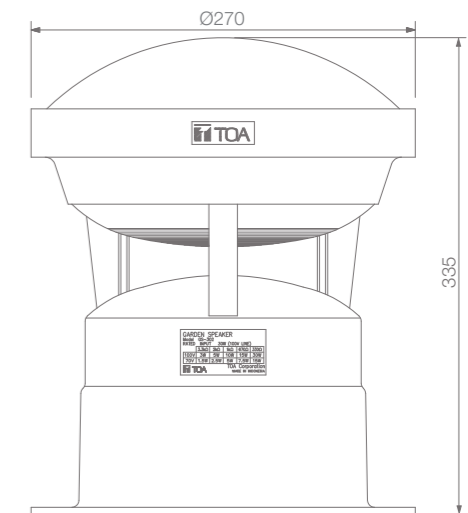
Features

- Stylish, attractively designed outdoor speaker
- Blends well into the surroundings of various locations
- Highly reliable performance
- Splashproof construction

Applications

- Gardens
- Theme parks
- Resort facilities

Specifications

	GS-302
Rated Input	30 W (100 V)
Tappings	30 / 15 / 10 / 5 / 3 W (100 V), 15 / 7.5 / 5 / 2.5 / 1.5 W (70 V)
Sensitivity (1 W, 1 m)	87 dB
Frequency Response	100 Hz – 8 kHz
Speaker Component	12 cm splash proof cone-type
Finish	Top cover and base: FRP resin, dark gray / Speaker panel: ABS resin, dark gray / Legs: Aluminum, dark gray
Dimensions (ø x H)	270 × 335 mm
Weight	2.4 kg

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SOUND CHECK

Design Speakers / **H-1 / H-2 / H-2WP**

H-1
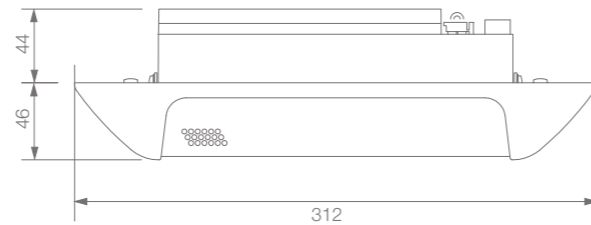
H-2 / H-2WP
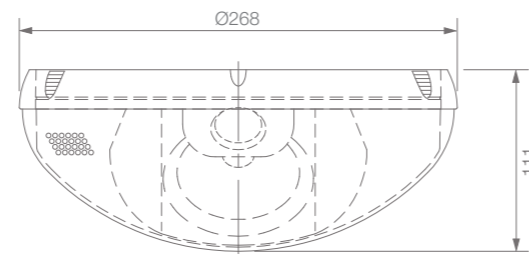
H-1

- Sleek and attractive 2-way design speaker
- Ferrofluid-cooled balanced dome tweeters and neodymium magnet cone woofers
- Narrow coverage area allows a controlled sound
- Sound direction can be adjusted within 90°
- Built-in transformer allows both high and low impedance
- High power handling
- Easy installation in standard electrical gang boxes
- Fire-rated ABS enclosure (UL 94-V0)
- HY-H1: Adapter frame (included)

H-2 / H-2WP

- 2-way design speaker
- Ferrofluid-cooled balanced dome tweeters, neodymium magnet cone woofers
- Narrow coverage area allows a controlled sound
- Sound direction can be adjusted within 360°
- High power handling of 120 W (continuous program)
- Fire-rated ABS enclosure (UL 94-V0)
- H-2WP: Weatherproof IP 64 certified

Applications

- Houses of worship
- Hotels
- Office buildings
- Museums
- Restaurants
- Retail stores
- Residential spaces

H-2WP
- Terraces
- Gardens
- Patios

Specifications

	H-1	**H-2 / H-2WP**
Rated Input	12W (100V)	
Tappings	12 / 6 / 3W (100V), 12 / 6 / 3 / 1.5W (70V)	
Sensitivity (1 W, 1 m)	85 dB	88 dB
Frequency Response	120 Hz – 20 kHz	100 Hz – 20 kHz
Speaker Component	8 x 5 cm cone woofer (neodymium magnet); 2.5 cm balanced dome tweeter	Low: 10 cm cone-type, High: Balanced dome-type
Finish	Enclosure: fire-resistant ABS resin (UL 94-V0), black / Trim piece: fire-resistant ABS resin (UL 94-V0), white / Grille: steel plate, white, paint / Adapter panel: stainless steel	Frame: Fire-resistant ABS resin, white / Base frame: Steel plate / Punched net: Steel plate, white paint
Dimensions (W x H x D)	312 × 126 × 90 mm	268 × 111 mm
Weight	1.5 kg	2.1 kg

Design Speakers / **H-3 / H-3WP / HB-1**
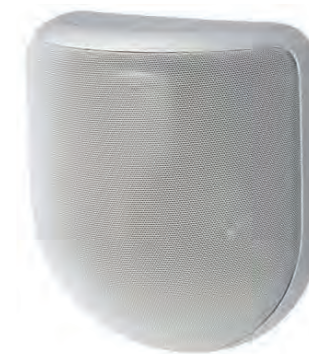
H-3 / H-3WP
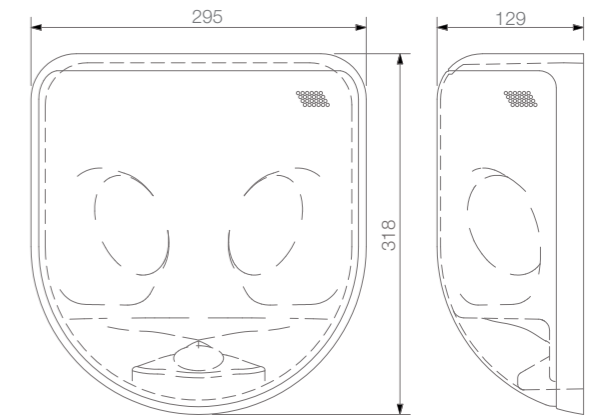
HB-1
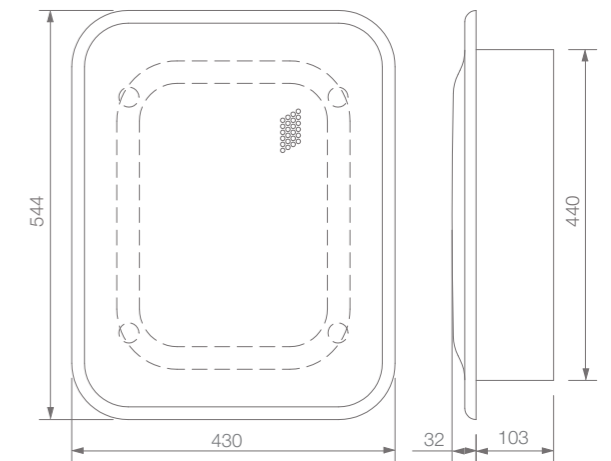
H-3 / H-3WP

- 2-way design speaker
- Dome tweeters and neodymium magnet cone woofers
- Quality audio between the speakers as well as directly in front of each speaker unit
- 180° coverage pattern, eliminating dead audio spaces
- Either low impedance (8 Ω / 16 Ω) or high impedance (70 V / 100 V)
- Easy unobtrusive installation at above head-height
- Fire-resistant ABS according to UL94: V-0
- H-3WP: Weatherproof version

HB-1

- For undisturbed interior aesthetics
- Extremely small depth for flush-mounting
- High-power 8" woofer with 110 mm 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
- Easy installation

Applications

- Ideal for long but narrow areas such as corridors in hotels, houses of worship, office buildings, museums, shops

H-3WP:
- Terraces
- Gardens
- Patios

Specifications

	H-3 / H-3WP	**HB-1**
Rated Input	30W (100V)	240W (continuous program), 80W (continuous pink noise)
Tappings	30 / 15 / 7.5W (100V), 30 / 15 / 7.5 / 3.75W (70V)	-
Rated Impedance	-	8 Ω
Sensitivity (1 W, 1 m)	89 dB	91 dB (installation in 1/2 free sound field)
Frequency Response	100 Hz – 20 kHz	45 Hz – 20 kHz
Speaker Component	Low: 10 cm cone-type x 2, High: 2.5cm dome-type (neodymium magnet)	20 cm cone-speaker
Finish	Enclosure: Fire-resistant ABS resin, black / Frame: Fire-resistant ABS resin, off-white / Punched net: Stainless plate, off-white, paint (H-3) or steel plate (zinc plating), off-white, powder coating (H-3WP) / Base frame: Steel plate, plating	Enclosure: Steel plate, black paint / Front frame: Fire-resistant ABS resin, off-white, paint / Punched net: Steel plate, off-white, paint
Dimensions (W x H x D)	295 × 318 × 129 mm	430 × 544 × 135 mm
Weight	3.3 kg	11 kg

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03 SPEAKERS /

Column Speakers / **TZ Series**

Delivering focused sound directivity for improved intelligibility.

The highly efficient TZ Series Column Speakers are compact speakers that deliver excellent sound performance in medium sized venues such as houses of worship, gymnasiums, auditoriums and more.

Multiple speaker units are arranged in a vertical array to produce a wide horizontal sound dispersion, yet at the same time, limit the vertical sound dispersion. This greatly minimizes reverberation problem in enclosed areas.

The TZ Series Column Speaker System is also available as weatherproof range that has attained a rating of IP-65. They are capable of withstanding weather conditions in outdoor installations.
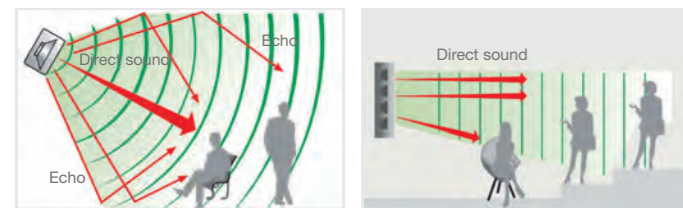
Standard Speaker

Column Speaker

Features

- Focused sound directivity
- Flexibility in installation
- Weater proof versions available with IP-65 rating
- Impedance matching
- Easy connection
- Ball proof tested
- Extended temperature range
- Brackets available for flexibility within installations

Options

- ST-16A: Speaker Stand

Applications

- Houses of worship
- Gymnasiums
- Auditoriums

Column Speakers / **TZ Series / TZ-206 / TZ-406 / TZ-606**

TZ-206B/ TZ-206BWP | TZ-206W/ TZ-206WWP | TZ-406B/ TZ-406BWP | TZ-406W/ TZ-406WWP | TZ-606B/ TZ-606BWP | TZ-606W/ TZ-606WWP

IP65

Specifications

	TZ-206B/W, TZ-406B/W, TZ-606B/W	TZ-206BWP/WWP, TZ-406BWP/WWP, TZ-606BWP/WWP
Rated Input	TZ-206: 20 W, TZ-406: 40 W, TZ-606: 60 W	
Tappings	TZ-206: 20 / 10 / 3 / 5 W / 2.5 W (100 V), 10 / 5 / 2.5 / 1.3 / 0.5 W (70 V) TZ-406: 40 / 20 / 10 / 5 W (100 V), 20 / 10 / 5 / 2.5 W (70 V) TZ-606: 60 / 30 / 15 / 7.5 W (100 V), 30 / 15 / 7.5 / 3.8 W (70 V)	
Sensitivity (1 W, 1 m)	TZ-206B/W: 90 dB TZ-406B/W: 93 dB TZ-606B/W: 95 dB	TZ-206BWP/WWP: 89 dB TZ-406BWP/WWP: 92 dB TZ-606BWP/WWP: 94 dB
Frequency Response	150 Hz – 16 kHz	150 Hz – 13 kHz
Speaker Component	TZ-206B/W: 10 cm cone-type x 2 TZ-406B/W: 10 cm cone-type x 4 TZ-606B/W: 10 cm cone-type x 6	TZ-206BWP/WWP: 10 cm cone-type x 2, waterproof TZ-406BWP/WWP: 10 cm cone-type x 4, waterproof TZ-606BWP/WWP: 10 cm cone-type x 6, waterproof
IP Code	–	IP-65
Finish	Enclosure: HIPS, black/white paint / Punched net: steel plate, black/white paint / Speaker bracket: Aluminium die-cast, black/white paint / Joint/wall bracket: Steel plate, t 1.6,black/white, paint	Enclosure: HIPS, black/white paint / Punched net: steel plate, black/white anti-rust paint / Speaker bracket: Aluminium die-cast, black/white paint / Joint/wall bracket: Steel plate, t 1.6,black, paint (ED coating)
Dimensions (W x H x D)	TZ-206: 135 x 250 x 128 mm, TZ-406: 135 x 498 x 128 mm, TZ-606: 135 x 746 x 128 mm	
Weight	TZ-206: 1.9 kg, TZ-406: 3.5 kg, TZ-606: 5.5 kg	

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Column Speakers / **TZ-105 / TZ-205**

TZ-105   TZ-205

IPX3   **EASE** data
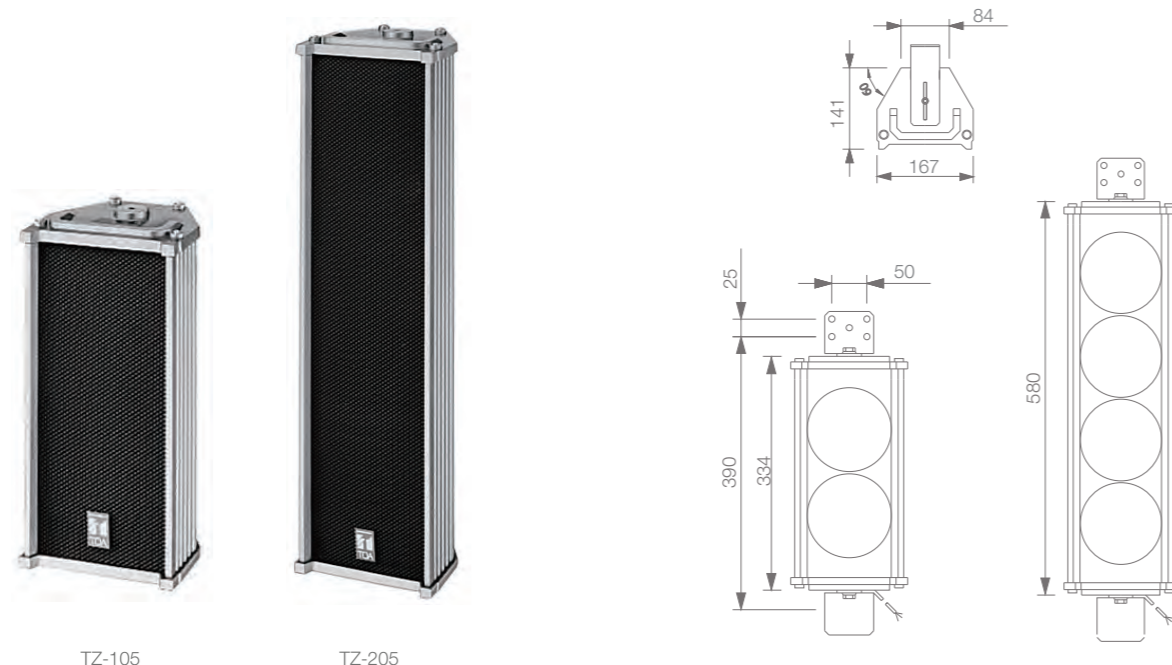
Features

- Narrow sound dispersion along a vertical axis, wide sound dispersion along a horizontal axis
- Splashproof metal body meets IPX3 requirements
- Speakers coming complete with wall mounting brackets or can be fitted to a speaker stand

Options

- YS-301: Mounting Bracket (Non-RoHS product)
- ST-16A: Speaker Stand

Applications

- Halls
- Houses of worship
- Auditoriums

Specifications

	TZ-105	**TZ-205**
Rated Input	10 W (100 V)	20 W (100 V)
Tappings	10 / 5 W (100 V)	20 / 10 W (100 V)
Sensitivity (1 W, 1 m)	90 dB	93 dB
Frequency Response	150 Hz – 10 kHz	
Speaker Component	12 cm cone-type x 2	12 cm cone-type x 4
Finish	Enclosure: Extruded aluminum, silver gray, full-glazed, baked paint / Grille: Punched aluminum net, black, matte, baked paint / Mounting bracket: Steel plate, silver gray, fully-glazed, baked paint	
Dimensions (W x H x D)	167 x 334 x 141 mm	167 x 580 x 141 mm
Weight	3.4 kg	5.1 kg

Column Speakers / **BS-1110W / BS-1120W**

BS-1110W   BS-1120W
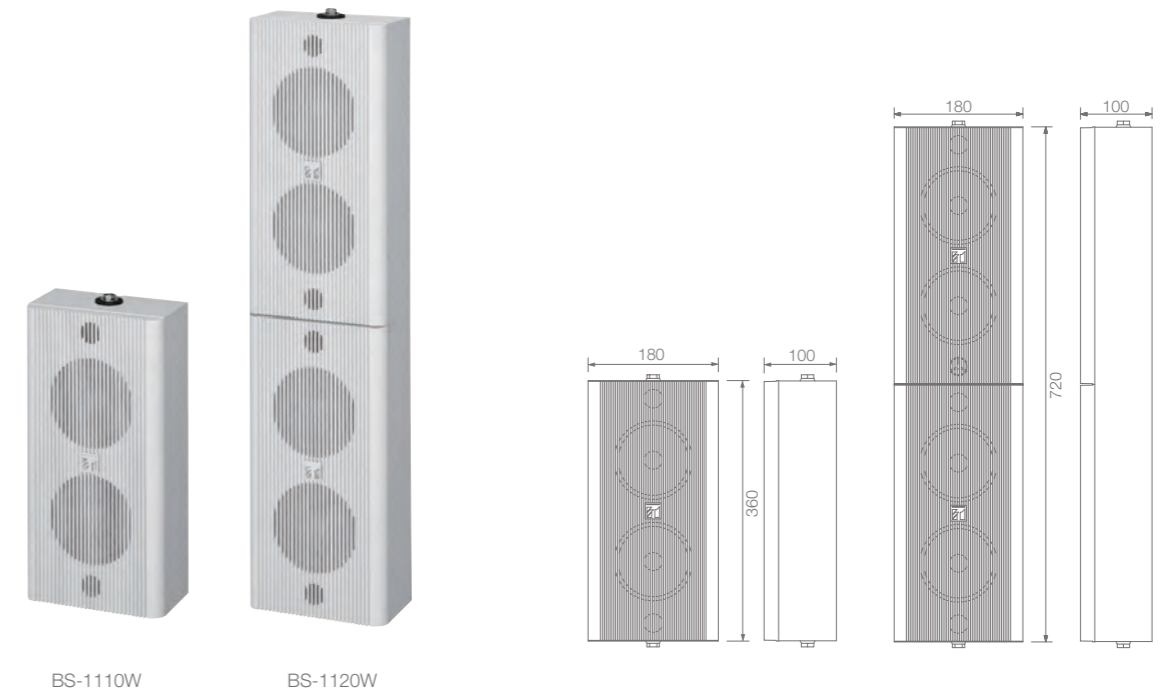
Features

- Wooden enclosure
- Indoor use
- Robust construction and impact resistance
- Wide horizontal and narrow vertical dispersion angle
- High and low impedance

Options

- YS-301: Mounting Bracket (Non-RoHS product)
- SP-410: Wall / Ceiling Mounting Bracket
- ST-16A: Speaker Stand

Applications

- Religious facilities
- Schools
- Auditoriums

Specifications

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

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03 SPEAKERS /

Plane Wave Speakers /

Clear announcements with narrow directivity by radiating plane wave sound.

The plane wave speaker features a flat speaker system equipped with plane wave units, realizing a narrow directivity pattern by radiating plane wave sound. A double-sided radiation type radiates sound both backward and forward, while a single-sided radiation type radiates sound forward only.

The speaker is designed to deliver sound output toward a limited target area. The targeted area can be covered with the small number of speakers, especially when using the double-sided sound radiation type. The plane wave speaker produces clear sound with reduced attenuation over distance. It's well-suited for information broadcast applications in locations where different announcements are made in close proximity.

Ordinary speaker
• Susceptible to the influence of sound reflections from the ceiling and floor
• Sound will be dispersed to non-target areas
• Spherical wave sound can easily attenuate
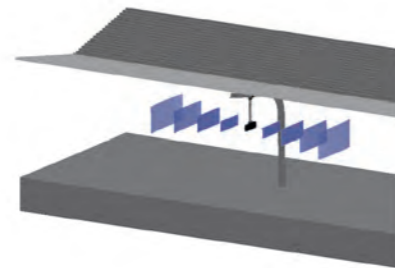
Plane wave speaker
• Less susceptible to the influence of sound reflections from the ceiling and floor
• Sound dispersion to non-target area is minimal
• Plane wave sound delivers even sound over a distance thanks to a low degree of sound attenuation

Plane Wave Speakers / **PW-1230DB / PW-1230DW / PW-1230SB / PW-1230SW**

PW-1230DB / PW-1230SB

PW-1230DW / PW-1230SW

IPX4   EASE data

2000
60
355
284
496
524
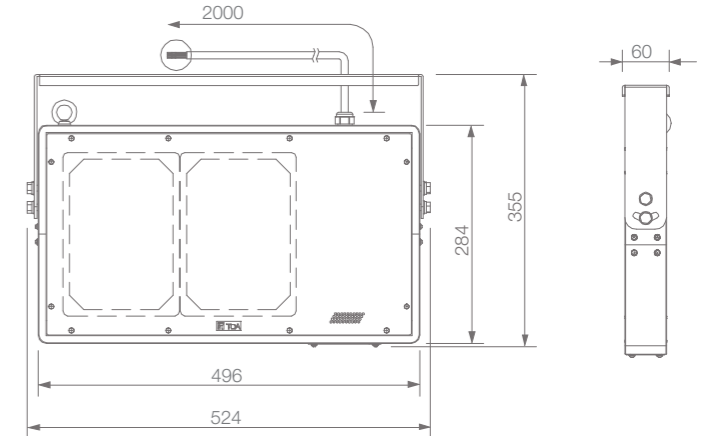
Features

• Two versions available: double-sided radiation and single-sided radiation
• 2 speaker units
• Narrow directivity
• Splash-proof construction
• Rust resistance
• Beam-tilting function
• Built-in high-pass filter

Applications

• Railroad stations
• School grounds
• Museums
• Attention announcement around escalators

Specifications

	PW-1230DB	PW-1230DW	PW-1230SB	PW-1230SW
Type of Radiation	Double-sided radiation		Single-side radiation	
Rated Input (100V)	30W			
Tappings	30 / 15 / 10 / 5W (100V), 30 / 15 / 7.5 / 5 / 2.5W (70V)			
Sensitivity (1W, 1m)	86dB (1 – 10kHz) (Beam tilting: FLAT, High pass filter: OFF)		87dB (1 – 10kHz) (Beam tilting: FLAT, High pass filter: OFF)	
Frequency Response	300Hz – 17.5kHz (Beam tilting : FLAT, High pass filter: OFF)		450Hz – 17.5kHz (Beam tilting : FLAT, High pass filter: OFF)	
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 (W x H x D)	524 × 355 × 60mm (including mounting bracket)			
Weight	7.3kg (including mounting bracket)		7.8kg (including mounting bracket)	

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Plane Wave Speakers / **PW-1430DB / PW-1430DW / PW-1430SB / PW-1430SW**

PW-1430DB / PW-1430SB

PW-1430DW / PW-1430SW

IPX4 **EASE data**
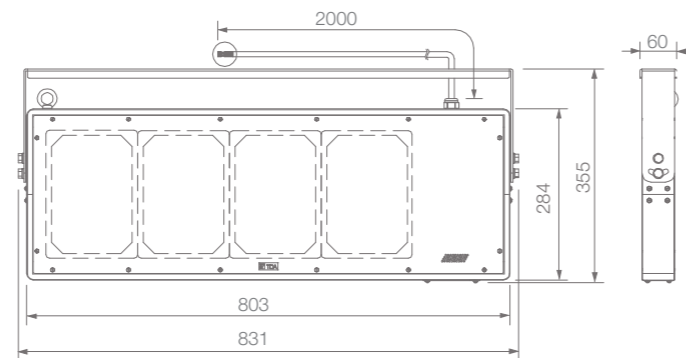
Features

- Two versions available: double-sided radiation and single-sided radiation
- 4 speaker units
- Narrow directivity
- Splash-proof construction
- Rust resistance
- Beam-tilting function
- Built-in high-pass filter

Applications

- Railroad stations
- School grounds
- Museums
- Attention announcement around escalators

Specifications

	PW-1430DB	PW-1430DW	PW-1430SB	PW-1430SW
Type of Radiation	Double-sided radiation		Single-side radiation	
Rated Input (100 V)	30 W			
Tappings	30 / 15 / 10 / 5 W (100 V), 30 / 15 / 7.5 / 5 / 2.5 W (70 V)			
Sensitivity (1 W, 1 m)	86 dB (1 – 10 kHz) (Beam tilting: FLAT, High pass filter: OFF)		87 dB (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)	
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 (W x H x D)	831 × 355 × 60 mm (including mounting bracket)			
Weight	11.4 kg (including mounting bracket)		11.9 kg (including mounting bracket)	

Satellite Speaker System / **BS-301B / BS-310W**

BS-301B

BS-301W
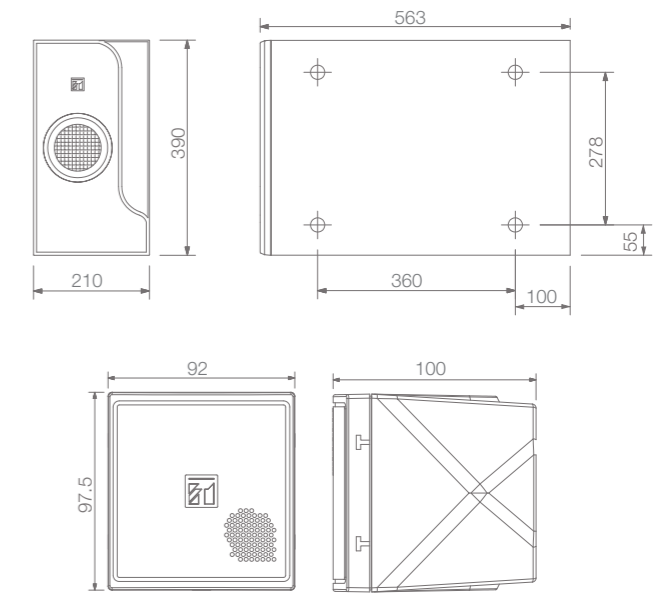
Features

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

Applications

- Shops
- Restaurants
- Cafés

Specifications

	BS-301B / BS-301W		
Power Handling Capacity	Continuous program: 160 W x 2 channels Continuous pink noise: 80 W x 2 channels Measured in a set configuration of a subwoofer (L or R channel) and 2 satellite speakers		
Sensitivity (1 W, 1 m)	81 dB x 2 channels		
Frequency Response	40 Hz – 20 kHz x 2 channels		
Subwoofer	Rated Impedance:	6 Ω x 2 channels	
	Speaker Component:	16 cm cone-type x 2 channels	
	Finish:	Front panel; ABS resin, Enclosure; Wood, Speaker bracket; steel plate; black or white paint	
	Dimensions:	210 (W) x 390 (H) x 563 (D) mm	
	Weight:	11.5 kg (excluding mounting bracket)	
Satellite Speaker	Rated Impedance:	8 Ω	
	Speaker Component:	8 cm cone-type x 2 channels	
	Finish:	Enclosure, Front panel; HIPS resin, Speaker bracket; steel plate; black or white paint	
	Dimensions:	92 (W) x 97.5 (H) x 100 (D) mm	
	Weight:	600 g (excluding mounting bracket)	
Weight	13.9 kg		

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Attenuators /

AT-12UP

Features

- Volume control for 100 V line
- Flush mounting: DIN 49037
- Continuous attenuation in 12 steps
- 12 W
- Mounting depth: 40 mm

Options

- Gira Switch Accessories

AT-50UP

Features

- Volume control for 100 V line
- Flush mounting: DIN 49037
- Continuous attenuation in 12 steps
- 50 W
- Mounting depth: 40 mm

Options

- Gira Switch Accessories

AT-100UP

Features

- Volume control for 100 V line
- Flush mounting: DIN 49037
- Continuous attenuation in 12 steps
- 100 W
- Mounting depth: 40 mm

Options

- Gira Switch Accessories

AT-12UPR

Features

- Volume control for 100 V Line
- Flush mounting: DIN 49037
- Continuous attenuation in 12 steps
- 12 W, with priority relay
- Mounting depth: 40 mm

Options

- Gira Switch Accessories

AT-50UPR

Features

- Volume control for 100 V Line
- Flush mounting: DIN 49037
- Continuous attenuation in 12 steps
- 50 W, with priority relay
- Mounting depth: 40 mm

Options

- Gira Switch Accessories

AT-100UPR

Features

- Volume control for 100 V Line
- Flush mounting: DIN 49037
- Continuous attenuation in 12 steps
- 100 W, with priority relay
- Mounting depth: 40 mm

Options

- Gira Switch Accessories

Attenuators /

AT-063AP

Features

- Attenuators with 5 step attenuation:
  „OFF", -18 dB, -12 dB, -6 dB, 0 dB
- Push-in connector allows quick terminal-cable connection
- Knob, panel, plate: ABS resin, white (RAL 1013 or equivalent), case: ABS resin, black
- 6 W

AT-303AP

Features

- Attenuators with 5 step attenuation:
  „OFF" -18 dB, -12 dB, -6 dB, 0 dB
- Push-in connector allows quick terminal-cableconnection
- Knob, panel, plate: ABS resin, white (RAL 1013 or equivalent), case: ABS resin, black
- 30 W

AT-603AP

Features

- Attenuators with 5 step attenuation:
  „OFF" -18 dB, -12 dB, -6 dB, 0 dB
- Push-in connector allows quick terminal-cableconnection
- Knob, panel, plate: ABS resin, white (RAL 1013 or equivalent), case: ABS resin, black
- 60 W

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

Features

- Attenuators with 8 step attenuation control (+/- 3 dB)
- Ergonomic control knob with better grip for easy turn
- 24 VDC overriding relay with red LED indicator
- Terminal block for thicker diameter cable
- Clip-on face plate
- Glossy finish in white (RAL 9016 or equivalent)
- AT-4012B-EB: 12 W
- AT-4030B-EB: 30 W
- AT-4060B-EB: 60 W
- AT-4120B-EB: 120 W
- AT-4200B-EB: 200 W

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Accessories /

PGW-6 / PGW-6R

Program Selector

Features
- Flush mounting DIN 49037
- One of 6 programs selectable
- Mounting depth: 30 mm
- PDW-6R with priority relay

UP-MV-206

Wall Mount Pre-Amplifier

Features
- With microphone (XLR) and AUX (RCA pin) input
- Phantom voltage for microphone on PCB selectable
- Volume control for microphone and AUX separately
- Finish: off-white

TM-60T

60 W Transformer

Features
- 60 W Transformer for 100 V lines (secondary impedances: 4/8/16 Ω)
- Weight 1.3 kg
- Non-RoHS product

Suitable Models
- SC-240

YC-150E

Back Box

Features
- Used with the PC-391 / PC-391T or N-8050DS flush-mounting kit
- Finish: Heavy chrome plating
- Dimensions (W x H x D): 145 x 95 x 57 mm
- Weight: 410 g
- Non-RoHS product

Suitable Models
- PC-391 / PC-391T

YS-301

Mounting Bracket

Features
- Finish: Hot rolling steel plate (Metallic gray)
- Non-RoHS product

Suitable Models
- TZ-105 / TZ-205
- BS-1110W / BS-1120W

SP-410

Wall / Ceiling
Mounting Bracket

Features
- Can be installed in combination with a 2-unit electrical box and can easily set or change the speaker orientation
- Finish: Base / Shaft: Stainless steel, Bracket: nickel-plated rolled steel plate

Suitable Models
- BS-1030B / BS-1030W
- BS-1110W / BS-1120W

ST-16A

Speaker Stand

Features
- Lightweight, smart speaker stand
- Load capacity: 7 kg
- Finish: Aluminium, silver, mat finish, Speaker mounting bracket: Polyamide resin, black
- Weight: 1.7 kg (bracket included)

Suitable Models
- BS-1030B / BS-1030W
- TZ-Series
- BS-1110W / BS-1120W

Accessories /

SP-420

Flush Mounting Frame

Features
- Designed to mount the speaker in a wall or ceiling
- Can be easily mounted to the sueface made of the plaster board or plywood
- Finish: Base bracket: Surface treated steel plate, white paint / Shaft and Mounting clip: Nickel plated rolled steel plate

Suitable Models
- BS-1030W

HY-AH1

Anchor Hanging Bracket

Features
- Designed to be mounted to an anchor bolt to prevent the full weight of a flush-mounted ceiling speaker from being directly applied to the ceiling panel
- Finish: Steel plate, plating
- Weight: 700 g

Suitable Models
- F-122C
- F-2322C
- F-2352C
- F-2852C

HY-BC1

Back Can

Features
- Metal case to be used when installing the flush-mounted ceiling speaker in exposed applications the ceiling panel
- Finish: Surface-treated steel plate, black, paint
- Weight: 1.5 kg

Suitable Models
- F-122C
- F-2322C

HY-TB1

Tile Bar Bridge

Features
- Long support frame (set of 2 rails) designed to provide secure support for flush-mounted ceiling speakers while preventing the speaker's weight from being directly applied to the ceiling panels.
- Finish: Steel plate, plating
- Weight: 500 g (2 pieces)

Suitable Models
- F-122C
- F-2322C
- F-2352C
- F-2852C

HY-TR1

Trim Ring

Features
- Used to install flush-mounted ceiling speakers in larger-than-designated mounting holes.
- Using up to two HY-TR1 rings in combination with other mounting hardware allows the speaker to be installed in mounting holes of from 200 to 300 mm (7 7/8" – 11 13/16") in diameter.
- Finish: Surface-treated steel plate, white, paint
- Weight: 500 g

Suitable Models
- F-122C
- F-2322C
- F-2352C

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'Drums, electric guitar, screaming fans – yet still hear every text passage loud and clear.'

A rich, well-mixed sound makes any concert a true audio experience. As the name suggests, the ProSound range by TOA is made for professionals by professionals and so is the technology behind it. From a small pavilion to a large stadium, it is professional equipment that truly makes the music.

So come on, let's rock ‚n' roll!

Yours, Dr. Sound

04 PROSOUND

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04 PROSOUND /

» The proposal including EASE simulation done by TOA convinced the responsible decision makers. «

Realized by the official Go Wild AG Dealer
event-one Veranstaltungstechnik, Switzerland

The requirement for the renovation of the ice rink was a voice alarm system according to EN 54 that also offers high performance sound. The basis for the hall sound information and one of our success factors in this project was definitely the EASE simulation with decentralized sound made by TOA.

The actual sound of the ice rink is now realized with 25 HX-5 speakers and 15 FB-120 subwoofers while the installed VM-3000 system and certified speakers ensure reliable voice evacuation in all areas.

The professional PA in the renovated ice rink in Olten, Switzerland, is realized with Variable Compact Array Speakers HX-5. Low frequencies are supported by FB-120 subwoofers.

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04 PROSOUND /

Digital Mixers / **9000 Series**

Unparalleled DSP mixer ideal for multi-zone paging, music distribution and room-combining applications.

The 9000 Series Digital Matrix Mixer redefines the conventional mixer/amplifier category by combining a modular matrix mixer, digital signal processor and amplifiers in a compact, two rack space package. The versatile series is ideal for multi-zone paging, music distribution and room-combining applications.

The series allows for easily configured, custom systems with up to eight mic/line inputs and eight outputs. Each 9000 Series chassis has two output channels with built-in DSP, including ten band parametric EQ, compressor, delay and more. Input and output modules include additional DSP.

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

Features

- Combination of Matrix and Mixer Mode
- 8 slots for modules
- 4 priorities selectable
- 2 DSP output channels included
- 10-band parametric equalizer
- Ducker-function (priority)

Applications

- Restaurants & bars
- Hotels
- Conference & board rooms
- Auditoriums
- Offices
- Museums
- Fitness clubs
- Theme parks
- Houses of worship

Digital Mixers / 9000 Series / **M-9000M2**

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Features

- Aluminum front panel and steel case
- For rack-mounting, 2 units height
- Up to 16 panels can be connected to 1 M-9000M2 by using a RC-001T control module
- Panels can be cascaded
- Different modules, remote panels and a sensing microphone for individual adjustment to the ambient noise
- Easy to use software

Options

- D-001T: Input Module
- ZP-001T: Telephone Module
- T-001T: Output Module
- AN-001T: Ambient Noise Control Module
- C-001T: Input / Output Control Module
- AN-9001: Sensor Microphone
- RC-001T: RS-485 Control Module
- SS-9001: Speaker Selection Module
- D-001R: Line Input Module with DSP
- ZM-9001, ZM-9002, ZM-9003, ZM-9011, ZM-9012, ZM-9013, ZM-9014: Remote Control Panels
- RM-9012C-EB: Remote Microphone

Applications

- Restaurants & bars
- Hotels
- Conference & board rooms
- Auditoriums
- Offices
- Museums
- Fitness clubs
- Theme parks
- Houses of worship

Specifications

	M-9000M2
Power Source	220 – 240 V AC, 50 / 60 Hz
Power Consumption	40 W
Frequency Response	20 Hz – 20 kHz
Audio Input	Max. 8 channels, modular (modules optional)
Audio Output	Preamplifier outputs 1 and 2: 0 dBV, 600 Ω, balanced, removable terminal blocks (3-pins), max. 8 outputs
Control Inputs and Outputs	RS-232C, D-sub connector (9-pins), 4 control inputs and outputs each, remote volume control, removable terminal block
Crosstalk	> 64 dB (20 kHz)
Functions	Tone control (bass, treble: ±12 dB), 10-bands parametric equalizer (31 steps, Q: 0,3 ...5), 10 speaker equalizer, high pass (-12 dB / Oct), low pass (-12 dB / Oct), Compressor (depth 1 to 5), Delay (0 ... 40 ms in 1 ms steps), 32 scene/event memories, 2 operation modes: mixer or matrix, key-lock
Distortion	< 0,008 %
S/N Ratio	90 dB
Finish	Front: Aluminum, black / Case: steel plate, black
Dimensions (W x H x D)	420 x 107.6 x 353 mm, 2 units
Weight	6 kg (without modules)

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Digital Mixers / 9000 Series / **CP-9550M2 / CP-9500M2**

Features

- CP-9550M2: 550 W (4 Ω) or 350 W (8 Ω)
- CP-9500M2: 500 W (100 V line, high impedance 20 Ω)
- Designed for a multitude of applications including audiovisual, zone paging, room combining and many more
- Can be used in conjunction with optional modules as mixer or paging amplifier by settings, depending on the application

Options

- AD-246: Power Supply
- D-001T: Input Module
- ZP-001T: Telephone Module
- T-001T: Output Module
- AN-001T: Ambient Noise Control Module
- C-001T: Input / Output Control Module
- AN-9001: Sensor Microphone
- RC-001T: RS-485 Control Module
- SS-9001: Speaker Selection Module
- D-001R: Line Input Module with DSP
- ZM-9001, ZM-9002, ZM-9003, ZM-9011, ZM-9012, ZM-9013, ZM-9014: Remote Control Panels
- RM-9012C: Remote Microphone

Applications

- Restaurants & bars
- Hotels
- Conference & board rooms
- Auditoriums
- Offices
- Museums
- Fitness clubs
- Theme parks
- Houses of worship

Specifications

	CP-9550M2	CP-9500M2
Power Source	220 – 240 V AC, 50 / 60 Hz	
Power Consumption	253 W (according to IEC/EN 60065)	220 W (according to IEC/EN 60065)
Audio Input	Max. 8 channels, modular construction (modules optional)	
Speaker Output	550 W x 2 (4 Ω), 350 W x 2 (8 Ω), Connector: Neutrik NL4MD-H-1 x 2	100 V, 500 W, 20 Ω, Connector: M4 screw terminal
Amplifier	Class D (100 V)	
Module Slot	Analog input (slot 1 – 8): -10 dBu, 10 kΩ, unbalanced; Digital Input (slot 1 – 4): 24 bit / 48 kHz; MIX output (slot 1 – 8): -14 dBV; Digital output (slot 5 – 7): 24 bit / 48 kHz; Power supply (slot 1 – 8): +24 V, -24 V, +6 V DC	
Control Input/Output	RS-232C, D-sub connector (9P, female); Control input: 4, no-voltage make contact, open voltage: 3.3 V DC, short-circuit current: 1 mA or less, 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 the DC voltage of 0 to 10 V, removable terminal block (14 pins)	
Signal Processing	24 bit / 48 kHz	
Cross Talk	> 60 dB (20 kHz)	
Functions	Tone Control Bass: +/-12 dB (at 100 Hz), Treble: +/-12 dB (at 10 kHz); Parametric EQ 10 bands, Freq: 20 Hz – 20 kHz, 31 steps, Variable range: +/- 12 dB, Q: 0.3 – 5; Speaker Equalizer 10 (setup software has 30 TOA speaker presets); High-pass Filter -12 dB/oct, Variable frequency range: 20 Hz - 20 kHz, 31 steps; Low-pass Filter -12 dB/oct, Variable frequency range: 20 Hz - 20 kHz, 31 steps; Compressor Depth: 1 – 5; Delay 0 – 40 ms (1 ms steps), maximum 40 ms (CH1 + CH2); Scene/Event Memory 32; Auxiliary Function: Key lock function	
Frequency Response	20 Hz – 20 kHz	
Distortion	< 0.008 %	< 0.3 %
S/N Ratio	90 dB	85 dB
Finish	Panel: aluminum, hair-line, black / Case: surface-treated steel plate, black paint	
Dimensions (W x H x D)	420 x 107.6 x 415 mm	
Weight	9.6 kg (without modules)	

Digital Mixers / 9000 Series / **Remote Control Panels**

ZM-9001

Remote Panel with 6 buttons

Features

- 6 buttons to activate preset selection or volume up/down
- Wiring: single conductor shielded cable
- Max. loop resistance: 50 Ω per line
- Mounting in one gang electical box
- Maximum 2 remote panels per chassis

ZM-9002

Remote Panel with 4 buttons and volume control

Features

- 4 buttons to activate preset selection or volume up/down
- Volume control knob
- Wiring: single conductor shielded cable
- Max. loop resistance: 50 Ω per line
- Mounting in one gang electical box
- Maximum 2 remote panels per chassis

ZM-9003

Remote Panel with 4 interlocking selection buttons and 2 momentary buttons

Features

- Max. loop resistance: 250 Ω per line
- Removable terminal block
- Maximum 2 remote panels per chassis

ZM-9011

Assignable Remote Button Panel

Features

- 4 assignable buttons with LED status indicator for Xpoint settings (on/off, select), paging activation, scene, relay activation
- Assignable ID rotary adjustment on box
- RC-001T required

ZM-9012

Assignable Volume Controller

Features

- Rotary encoder can be assigned to control any input or output volume
- RC-001T required

ZM-9013

Assignable Remote Button Panel

Features

- 8 assignable buttons with LED status indicator for Xpoint settings (on/off, select), paging activation, scene, relay activation
- Assignable ID rotary adjustment on box
- RC-001T required

ZM-9014

Assignable Remote Button Panel

Features

- 4 assignable buttons with LED status indicator for Xpoint settings (on/off, select), paging activation, scene, relay activation
- Assignable ID rotary adjustment on box
- RC-001T required

RM-9012C-EB

Remote Microphone

Features

- Unidirectional electret condenser microphone with balanced audio output
- An all-call button for selecting all zones
- Clear button for clearing all zone selections
- Announcement to the selected zones out of a maximum of 12 zones
- 1-tone chime function with swich setting
- LED indicator for each selector

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Digital Mixers / 9000 Series / **Modules**

D-001T

Dual Mic / Line Input Module with DSP

Features

- 2 balanced mic / line Inputs
- Digital signal processing:
  - 10-band parametric EQ
  - Bass / treble, loudness
  - High pass / low pass filters, compressor
- Adjustable sensitivity (-60 ... -10 dB, 9-steps)
- Phantom power (24 V DC)
- Removable terminal block
- Max. 4 input modules / chassis
- Required for VOX-function and input measure

T-001T

Dual Line Output Expansion Module with DSP

Features

- 2 balanced line outputs
- Digital signal processing:
  - 10-band parametric EQ
  - Bass / treble, loudness
  - High pass / low pass filters, compressor
- Removable terminal block
- Max. 3 output modules / chassis

AN-9001

Ambient Noise Sensor Microphone

Features

- Ceiling or wall mount condenser microphone
- Fits one gang electrical box
- Use with AN-001T module or DP-L2 processor

ZP-001T

Telephone Zone Paging Module

Features

- Telephone paging to up to 8 zones. Uses DTMF dialing access outputs
- Dial up to 8 output zones in one operation (compatible with analog extension or page port)
- Page port operation requires closed contact
- RJ-11 telephone plug or detachable screw terminals
- Max. 1 telephone module / chassis

C-001T

Input / Output Control Module

Features

- 8 assignable control inputs for activation
  - Event / volume / mute / remote
  - Power on / off
  - Emergency mute
- 8 assignable control outputs for activating external relays
- Removable screw terminals
- Max. 1 control module / chassis

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Digital Mixers / 9000 Series / **Modules**

SS-9001

Speaker Selection Module

Features

- Up to 4 speaker lines switchable
- 2 amplifier inputs for announcements and BGM
- Interconnectable to other TOA systems

SS-9012 EB

Speaker Selector

Features

- It selectively distributes each of 2 amplified inputs to the same 12 output zones by the status of corresponding contact closure input
- It requires DC 24 V power supply (AC Adapter, AD-246 or equivalent)

AN-001T

Ambient Noise Control Module

Features

- Automatic adjusts output gain to compensate for changes in ambient noise level
- 2 microphone inputs with 24 V phantom power
- 14 preset gain ratios
- Each input can be assigned to control a specific output
- Only in combination with AN-9001 sensor microphone
- Max. 2 modules per chassis

RC-001T

RS-485 Control Module

Features

- For 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 for up to 8 modules
- 24 V DC power adapter (optional)
- AD-246 required for each port
- May be used in any control option slot in addition with C-001T

D-001R

Line Input Module with DSP

Features

- Two RCA phone inputs per channel provides stereo summing
- Digital Signal Processing
  - 10-band parametric EQ
  - Bass / treble, loudness
  - High pass / low pass filters, compressor
- Max. 4 modules / chassis

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Digital Mixers / **D-900 Series**

High sound quality and remote control capability in a compact, modular digital mixer.

The D-901 digital mixer is a fully modular, cost-effective digital mixer featuring a 12-input, 8-bus, 8-output channel configuration (12 x 8 matrix) with easy operation that can be expanded as application requires.

It's 3U-sized only but incorporates several of the most important functions. These include a digital mixer, feedback suppression, auto mixing, parametric EQ, compression, delay and echo. Its remarkable operational scope allows it to do the work that conventionally requires several different pieces of equipment, providing a cost-effective solution that is perfect for any requirement.

Features

- Feedback suppressor
- Automatic mixing function
- Sound processing
- Ergonomic control layout
- Wide application scope and remote control ability

Applications

- Hotel banquets
- Indoor sports facilities
- Multipurpose halls
- Houses of worships

Digital Mixers / D-900 Series / Remote Console Unit / **D-901**

Features

- 12-input, 8-bus, 8-output channel configuration (12 x 8 matrix) with easy operation
- Can be expanded as application requires
- Convenient front panel controls and display make it easy to perform all functions and confirm parameter settings without requiring a PC
- Ability to store up to 16 sound parameter setting configurations in memory for instant recall when required

Options

- D-911: VCA Fader Unit
- RS-232C port: allows external control by third party A/V control units
- Modules see from page 163

Applications

- Hotel banquets
- Indoor sports facilities
- Multipurpose halls
- Houses of worships

Specifications

	D-901
Power Source	100 – 120V, 230V AC, 50 / 60Hz
Power Consumption	40W
Frequency Response	20Hz – 20kHz, ±1 dB (±4 dBu 1 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, equalizer / filter: parametric equalizer: 20 – 20000Hz, ±15dB, Q: 0.267 – 69.249, filtering: high-pass filter 20 – 20000Hz, 6 dB/oct., 12dB/oct. low-pass filter 20 – 20000Hz, 6dB/oct, 12dB/oct, notch filter 20 – 20000Hz, Q: 8.651 – 69.249, all-pass filter 20 – 20000Hz, Q: 0.267 – 69.249, high shelving filter 6 – 20000Hz, ±15dB, low shelving filter 20 – 500Hz, ±15dB, horn equalizer 20000Hz, 0 to +18dB (1dB steps), compressor: crossover filter: LR / BW / BE 20 – 20000 Hz, 6dB/oct, 12dB/oct, 18dB/oct, 24dB/oct, threshold: –20dB to +20dB, ratio: 1:1, 2:1, 3:1, 4:1, 8:1, 12:1, 20:1, infinite:1, attack time: 0.2ms – 5s, release time: 10ms to 5s, Delay gain: – infinite to +10dB, delay time: 0 – 682.6ms (0.021ms steps), matrix: 12 x 8
Preset Memory	16
Auxiliary Function	System locking function
Control	RS-232C, D-sub connector (9 pins), remote control module (option)
Front Panel Section	Preset memory recall key: 8, LCD screen, screen shift key (up/down/left/right), setting knob, Input level indicator: dual 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
Finish	Panel: aluminum, hair-line finish, black / Others: pre-coated steel plate, black, 30 % gloss
Dimensions (W x H x D)	482.6 x 132.6 x 320mm (excluding projection), 3 units
Weight	6.9kg

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02 INTERCOM SYSTEM 070–093

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Digital Mixers / D-900 Series / VCA Fader Unit / **D-911**

Features

- 100 mm fader
- Volume control of all channels and contact controls
- 12 fader for input channels
- 8 output volume controls
- 8 LED-illuminated switches
- Remote power control
- Rack mountable
- D-984VC: VCA Control Module required

Specifications

	D-911
Power Source	5 V DC (supplied from the optional D-984VC)
Connector	RJ45 connector × 8
Input Fader Control	Input fader (100 mm) × 12
Output Volume Control	Output volume control × 8
Contact Control	Illuminated switch × 8
Remote Switch	Seesaw switch for activating the remote function of the power distributor
Remote Output	No-voltage make contact output (contact capacity: 30 V DC, 4 A)
Finish	Panel: Pre-coated steel plate, black, 30 % gloss
Dimensions (W x H x D)	482.6 × 177 × 61.3 mm (excluding projection)
Weight	2.7 kg

Digital Mixers / D-900 Series / Modules

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Digital Mixers / **D-2000 Series**

Expandable all-in-one design offering easy operation and system control capabilities.

Expandable to a massive 128 input / output configuration, the D-2000 Series includes various modules and peripherals that can be combined to create the best possible sound in small to medium-size venues of all types.

• Expandable to 128 input / output
• User-specific configurations
• Fully modular design makes it a simple matter to create a configuration that meets specific user requirements
• The system is featuring a 24-bus matrix
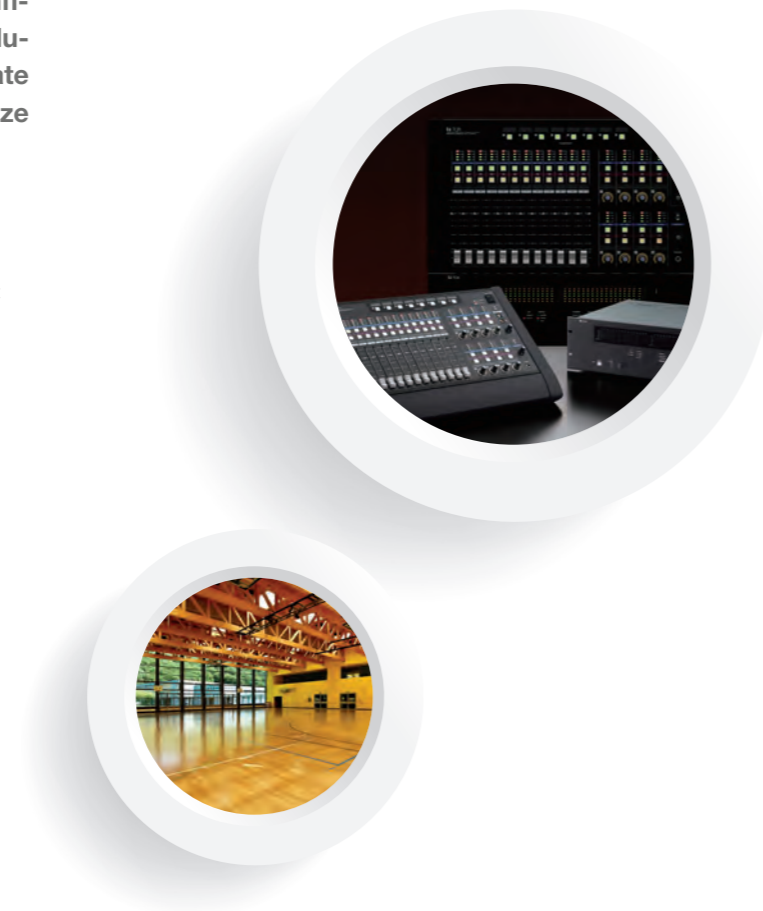
Features

• Auto-mixing:
  - NOM (Number of Open Microphones)
  - Ducker function (Auto-Mute function)
• Highly effective feedback suppression:
  - Feedback elimination for up to 4 channels
  - Each channel can control 12 frequencies
• 2 versatile suppression modes: either presetable auto mode or realtime dynamic mode

• Essential audio processing:
  - Delay, high pass, low pass and notch filters, parametric equalizers, compression/auto leveller, gate, crossover frequencies and input trim gain
• The dedicated software's graphic, visually attractive user interface helps streamline settings and adjustments

Applications

• Hotel banquets
• Indoor sports facilities
• Multipurpose halls
• Houses of worships

Digital Mixers / D-2000 Series / Processor Unit / **D-2008SP**

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Features

• 32 preset memories for user convenience
• Up to 32 different routing and parameter configurations can be stored for frequent changes in staging, seating and speaker arrangements
• Intuitive GUI
• Mixing console option offers easy user operation
• User-friendly VCA control

Options

• D-911: VCA Fader Unit
• RS-232C port: allows external control by third party A/V control units
• Modules from page 163

Applications

• Hotel banquets
• Indoor sports facilities
• Multipurpose halls
• Houses of worships

Specifications

	D-2008SP
Power Source	220 – 240V AC, 50 / 60Hz
Power Consumption	76W
Frequency Response	20Hz – 20kHz, ±1dB (+4dB Input)
Sampling Frequency	48kHz
Inputs / Outputs	Input: Max. 32 channels, modular construction (modules optional) Output: Max. 32 channels, modular construction (modules optional) Monitor bus; 1 stereo input, 1 stereo output, 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
Presets	32
Aux Functions	Key lock function
LAN	10BASE-T/100BASE-TX,(Automatic-Negotiation) connected via a switching hub Network protocol: TCP/IP Connection cable: Shielded Category 5 or higher twisted pair LAN cable (CAT5-STP) Maximum cable distance: 100m (between D-2008SP and switching sub)
Control	RS-232C, D-sub connector (9 pins) used for external control, Module: Remote control module slot: 2
Dimensions (W x H x D)	482 x 132.6 x 343.4mm
Weight	6.3 kg

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Digital Mixers / D-2000 Series / Remote Console Unit / **D-2012C**

Features

- Mixing console offers easy user operation
- The digital mixing processor D-2008SP can be connected via network
- 12 motorized faders and 8 rotary encoders
- Access to up to 80 channels
- Simplified mixing operation that suit non-professional users
- Monitoring of input and output channel signal levels
- Recalling preset memory settings
- Contact control

Options

- D-2012AS: Console Case

Specifications

	D-2012C
Power Source	220 – 240 V AC, 50 / 60 Hz
Power Consumption	18 W
Volume Adjustment	100 mm motorized fader × 12, Rotary encoder x 8
Line Input	1 channel (stereo), +10 to -20 dBu, 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
LAN	Network I/F: 10BASE-T/100BASE-TX (Automatic-Negotiation) RJ45 connector, connected via a switching hub Network protocol: TCP/IP Connection cable: Shielded twisted pair (STP) Category 5 or higher LAN cable Maximum cable distance: 100 m (between D-2008SP and switching sub)
Control	RS-232C: D-sub connector (9 pins) for maintenance use
Dimensions (W x H x D)	482 × 266 × 138 mm
Weight	6.6 kg

Digital Mixers / D-900 & D-2000 Series / **Input Modules**

D-2000AD1

Mic/Line Input Module
(monaural type)

Features

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

D-921E

Mic/Line Input Module
(24 bits monaural type)

Features

- 2-channel, removable terminal block
- A/D converter: 24 bit
- Phantom power supply (15 V)
- Distortion: 0.05 % or less
- Input sensitivity and phantom power settings can be performed at the front panel

D-921F

Mic/Line Input Module
(24 bits monaural type)

Features

- 2-channel, XLR connectors
- A/D converter: 24 bit
- Phantom power supply (15 V)
- Distortion: 0.05 % or less
- Input sensitivity and phantom power settings can be performed at the front panel

D-922E

Mic/Line Input Module
(20 bits monaural type)

Features

- 2-channel, Removable terminal block
- A/D converter: 20 bit
- Phantom power supply (15 V)
- Distortion: 0.05 % or less
- The D-901's 4-pole DIP switch is used to set the input sensitivity, phantom power supply and ground lifting

D-922F

Mic/Line Input Module
(20 bits monaural type)

Features

- 2-channel, XLR connectors
- A/D converter: 20 bit
- Phantom power supply (15 V)
- Distortion: 0.05 % or less
- The D-901's 4-pole DIP switch is used to set the input sensitivity, phantom power supply and ground lifting

D-936R

Stereo Select
Input Module

Features

- 4-channel, RCA pin jack
- A/D converter: 24 bit
- Distortion: 0.05 % or less
- 2 stereo transmission modes: 1) Selection of one of the 4 stereo inputs for transmission to the D-901 2) Mixing of all 4 stereo inputs, transmitting the mixed signal to the D-901 through left / right channel outputs
- Mode settings and stereo selection are performed on the front panel

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Digital Mixers / D-900 & D-2000 Series / **Input & Output Modules**

D-923AE
Digital Input Module

Features

- 2-channel line input
- Digital signals can be input, permitting direct connection of the D-901 Digital Mixer to equipment having a digital output
- AES/EBU-Format
- Owing to the built-in sample rate converter, the module can handle signals of various sampling frequencies

D-2000DA1
Line Output Module

Features

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

D-971M
Line Output Module

Features

- 4-channel, XLR connectors
- D/A converter: 24 bit
- Distortion: 0.05 % or less

D-971E
Line Output Module

Features

- 4-channel, Removable terminal block
- D/A converter: 24 bit
- Distortion: 0.05 % or less

D-971R
Line Output Module

Features

- 4-channel, RCA pin jack
- D/A converter: 24 bit
- Distortion: 0.05 % or less

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Digital Mixers / D-900 & D-2000 Series / **Output & Control Modules**

D-972AE
Digital Output Module

Features

- 4-Channel Digital Output Module
- Digital signals can be output, permitting direct connection of the D-901 Digital Mixer to equipment having a digital input
- AES/EBU-Format

D-981
Remote Control Module

Features

- 8 contact inputs, 8 contact outputs
- Permits preset memory recall, input/output channel volume control, stereo input selection and channel ON/OFF operation to be remotely controlled from external equipment
- Tally output can also be provided for external control

D-983
Remote Control Module

Features

- 24 contact inputs, 16 contact outputs
- Permits preset memory recall, input/output channel volume control, stereo input selection and channel ON/OFF operation to be remotely controlled from external equipment
- Tally output can also be provided for external control

D-984VC
VCA Control

Features

- Interface to D-911 Remote Controller
- 8 RJ-45 connectors
- Control up to 12 inputs, 8 outputs

D-2000CB
CobraNet* Interface Module

Features

- Allows audio transmission among D-2008SPs

*CobraNet was developed by Cirrus Logic, a US company and is a 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.

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04 PROSOUND /

Digital Mixers / **MX-6224D**

The ultimate choice for mosques.

The number of mosques around the world is rapidly increasing however there are very few sound systems that can match their complex needs, as well as their tight budget.

TOA has created the MX-6224D, an affordable digital mixer amplifier, specifically to cater for medium and small mosques. The MX-6224D is a reliable and simple system, needing very little technical knowledge to operate, yet still maintains exceptional sound quality.

Remote Controller

Mihrab

Minbar

High-pass filter

Minaret

3 band EQ for microphone inputs

Digital effector for microphone input 1-4 / 1-6

12 pattern preset with volume control

Indoor
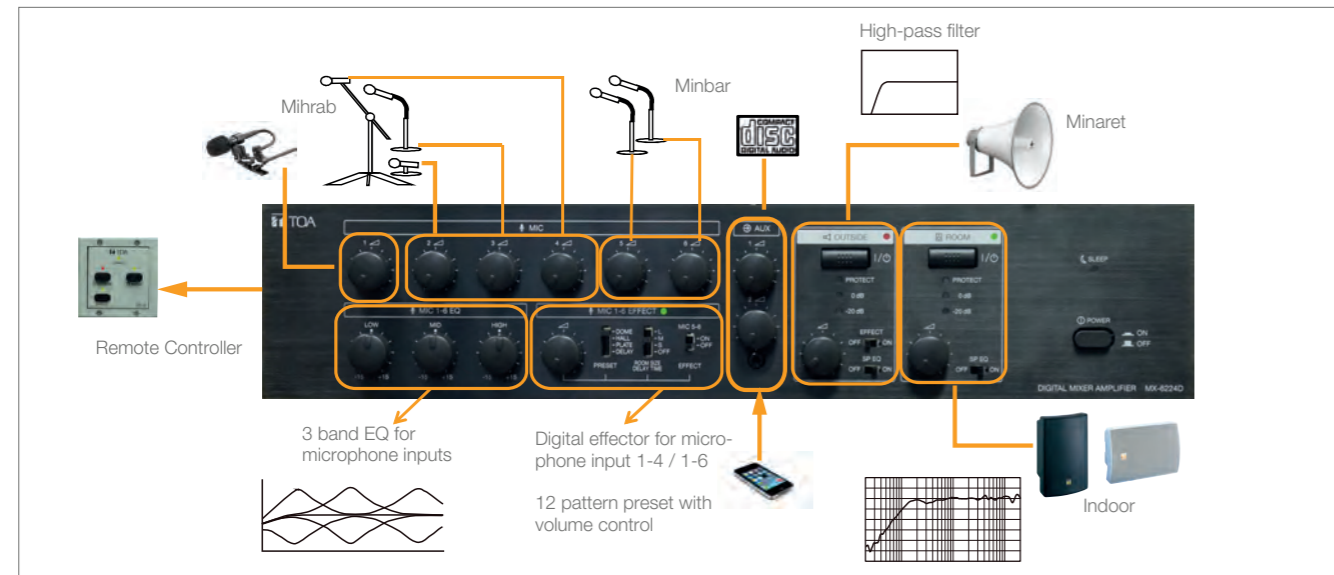
Digital Mixers / **MX-6224D**

Features

- 2 x 240W Digital Mixer Amplifier
- Incorporating DSP function
- Class D amplifier
- Reliable sound quality
- Optimal digital signal processing
- Easily-operable advanced functions

Options

- RC-03: Remote Control Panel
- DM-1300: Unidirectional Microphone
- DM-1500: Unidirectional Microphone
- EM-410: Lavalier Microphone

Applications

- Small- to medium-sized mosques

Specifications

	MX-6224D
Power Source	220 – 240 V AC, 50 / 60 Hz
Power Output	2 ch x 240 W (100 V, 42 Ω, rated output)
Power Consumption	150 W (according to IEC60065); 650 W (at rated output, both 2 ch)
Power Amplifier Class	Class D Output transformer less galvanic isolated output
Frequency Response	50 Hz – 20 kHz ±3 dB (at 1/3 rated output, rated load, from power amplifier input)
Distortion	< 1 % (at 1 kHz, 1/3 rated output power)
Output Regulation	Less than 2 dB no load to full load (at 1 kHz, 1/3 rated output power)
Inputs	• MIC 1: -50 dBV (24 V phantom powered) / -60 dBV (phantom power off), 600 Ω, electronically-balanced, 6.3 mm phone jack • MIC 2 – 4: -66 dBV, 200 Ω, electronically balanced, 6.3 mm phone jack or XLR • MIC 5 – 6: -60 dBV, 600 Ω, electronically-balanced, 6.3 mm phone jack or XLR • AUX 1: -10 dBV, 10 kΩ mixed monaural, unbalanced, RCA pin jacks (1 pair) • AUX 2: -20 dBV, 10 kΩ mixed monaural, stereo mini jack
PWR AMP IN ROOM/ POWR AMP IN OUTSIDE	1.0 V (0 dBV), Unbalanced 10 kΩ, RCA mini jack
Output	PWR AMP OUT ROOM, PWR AMP OUT OUTSIDE, REC OUT, EFFECT BUS OUT, PRE AMP OUT ROOM, PRE AMP OUT OUTSIDE
S/N Ratio	60 dB or less
Finish	Front: Aluminum, black / Case: Steel plate, black
Dimensions (W x H x D)	420 x 99 x 364.8 mm
Weight	6.5 kg

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Digital Mixers / **M-633D**

Features

- One-touch operation
- Automatic resonance control (ARC) with room mode frequency detection and inverse response curve for compensation
- Automatic clipguard (ACG)
- Automatic feedback suppressor (FBS)
- Automatic mute function
- Clearly, highly articulate sound
- 1 unit height

Applications

- Meeting rooms
- Gymnasiums
- Houses of worship

Specifications

	M-633D
Power Source	220 – 240 V AC, 50 / 60 Hz
Power Consumption	14 W
Frequency Response	20 Hz – 20 kHz
Input	6 monaural input channels, selectable independently from 3 types of inputs for each channel: LINE, MIC or PHANTOM, LINE: -10 dBu, 2.4 kΩ, MIC: -46 dBV, 2.4 kΩ, PHANTOM: -46 dBV, 2.4 kΩ, supplies +24V DC / 10 mA, electronically balanced, removable terminal block (3 pins), phone jack, 3 stereo inputs (L, R): -10 dBV / 10 kΩ, RCA jack, stereo mini jack
Output	2 monaural outputs: 0 dBV, electronically balanced, removable terminal block (3 pins) 1 stereo output (L, R): 0 dBV, electronically balanced, removable terminal block (3 pins) 1 stereo recording output (L,R): -10 dBV, RCA jack
Bus Line	Monaural channel x 2, stereo channel x 1
Distortion	< 0.03 %
Sampling Frequency	48 kHz / 24 bits
Signal Processing	Automatic resonance control (ARC), feedback suppressor (FBS), automatic clipguard (ACG), automatic mute
S/N Ratio	90 dB or more (IHF-A weighted)
Finish	Front: Aluminum, black / Case: Steel plate, black
Dimensions (W x H x D)	420 x 44 x 341.3 mm
Weight	4 kg

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Digital Mixers / **M-864D**

Features

- 15 input and 5 output channels per unit
- 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 Equalizer
- Advanced acoustic compensation can be automatically performed without using an acoustic measuring instrument
- Furnished with various function setting buttons and 14 analog volume faders
- Can be operated without need for use of a PC, by connecting the PC, optional Remote control panel or via iPad app

Options

- ZM-9011: Remote Control Panel
- ZM-9012: Remote Control Panel
- ZM-9013: Remote Control Panel
- ZM-9014: Remote Control Panel
- AD-246: AC Adapter

Applications

- Conference halls
- All-purpose halls
- Houses of worship

Specifications

	M-864D
Power Source	220 – 240 V AC, 50 / 60 Hz
Power Consumption	30 W
Frequency Response	20 Hz – 20 kHz, ±1 dB
Sampling Frequency	48 kHz / 24 bits
Distortion	< 0.03 %, 1 kHz, +4 dBu input/output, 20 Hz – 20 kHz BPF
Crosstalk	-80 dB or less, 1 kHz
Input	8 monaural input channels, removable terminal block (3P) • Phantom power (+24 V DC, 10 mA, ON/OFF switchable for each channel) • Gain setting (settable for each channel) 7 stereo input (L, R) 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) • -10 dBu (max. +10 dBu), 10 kΩ • Trim gain for each individual channel: -∞ to 0 dB (except front mounted input)
Output	4 output channels, +4 dBu (max. +24 dBu), applicable load 600 Ω or more, electronically-balanced, removable terminal block (3P) 1 recording output (L, R) channel: -10 dBu (max. +10 dBu), applicable load 1 kΩ or more, RCA jack, gain is adjustable
Contact 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)
Signal Processing	Automatic Resonance Control (ARC) Function, Feedback Suppressor Function, Filter: 8 channels (each monaural input channel), high-pass filter: 20 Hz – 20 kHz, Tone Controller: BASS, MID, TREBLE, Parametric Equalizer: 20 Hz – 20 kHz, ±15 dB, 4 channels (each output channel), Matrix: 12 x 4, Crosspoint Gain: -∞ to 0 dB in 1 dB steps, Auto Mute Function
Finish	Panel: Aluminum, hairline, black / Case: Surface treated steel plate
Dimensions (W x H x D)	482.6 x 177.1 x 157.2 mm
Weight	5.1 kg

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Mixers / **M-164E-AE**

Features

- Analog mixer with effect DSP function
- 16 channels (6 mono + 5 stereo) with a fader and a meter-bridge for level monitoring
- Variety of input / output connectors for many types of audio instruments
- Built-in effect functions for simple mixing with reverb, delay, chorus and other effects

Applications

- Mosques with reverb effect
- Restaurants
- Conference & lecture rooms
- Video conference rooms

Specifications

	M-164E-AE
Power Source	100 – 240 V AC, 50 / 60 Hz with AC Adapter: 12 V/ 2.5 A
Power Consumption	25 W
Frequency Response	20 Hz – 20 kHz (+1 /-3 dB, Trim at max, 150 Ω load)
Distortion	<0,01 % (20 Hz – 20 kHz, Trim at min.)
Inputs / Outputs	16 Inputs, 4 Output Buses, 2 Aux Sends, analog
Input	6 x Mic/Line Inputs: • 6 x Mic Inputs: XLR 3 female, electronically balanced, 2.4 kΩ, Input level: nominal -58 dBu (Trim at max.) / max. + 10 dBu (Trim at min.) or 6 x Line Inputs: 3-pole, electronically balanced, 22 kΩ, Input level: nominal -38 dBu (Trim at max.) / max. + 30 dBu (Trim at min.) 5 x Stereo Inputs: • Input 7 – 8 & 13 – 14: line jacks 6.3 mm (TRS), electronically balanced, 10 kΩ, Input level: nominal +4 dBu / max. + 22 dBu • Input 9 – 10: RCA pin jacks, unbalanced, 47 kΩ (with Phono on), Input level: nominal -10 dBV (-54 dBV with Phono on / max. + 11 dBV • Input 11 – 12: RCA pin jacks, unbalanced, 10 kΩ (with Phono on), Input level: nominal -10 dBV / max. + 11 dBV • Input 15 – 16: 3-pole mini jack (tip: L), unbalanced, 10 kΩ, Input level: nominal -10 dBV / max. + 11 dBV
Output	• Stereo Outputs (L,R) balanced; Line jacks 6.3 mm, 100 Ω, output level: nominal +4 dBu / max. + 24 dBu • Stereo Outputs (Mono) pseudo balanced; Line jacks 6.3 mm, 100 Ω, output level: nominal -2 dBu / max. + 20 dBu • Stereo Outputs (L,R) unbalanced; RCA jacks, 100 Ω, output level: nominal -10 dBV / max. + 6 dBV • Sub Outputs (L,R) pseudo balanced; Line jacks 6.3 mm, 150 Ω, output level: nominal +4 dBu / max. + 20 dBu • Sub Outputs (Mono) pseudo balanced; Line jacks 6.3 mm, 150 Ω, output level: nominal -2 dBu / max. + 20 dBu • Aux Send (1,2) jacks; Line jacks 6.3 mm, 150 Ω, output level: nominal +4 dBu / max. + 20 dBu • Phones (1,2) line jacks, max. output 45 mW + 45 mW (1 %THD, 32 Ω load)
Monitor	By head phone
Processing	3-band / 2-band EQ, HPF, Effect Return
Effect	16 preset digital effects
Dimensions (W x H x D)	390 x 112 x 344.5 mm
Weight	3.4 kg

Mixers / **M-243**

Features

- Stereo mixer
- 2 mono and 4 stereo inputs, 1 stereo and 2 mono outputs plus 1 stereo and 2 mono sub-inputs to the output mix buses
- Each input can be assigned to any combination of the three outputs
- Switchable high pass filter on each monaural input to filter out unwanted low frequencies, especially for speech use

Applications

- Boardrooms
- Conference rooms
- Health clubs
- Restaurants

Specifications

	M-243
Power Source	120 V AC, 50 / 60 Hz
Power Consumption	10 W
Frequency Response	20 Hz – 20 kHz (+1 /-2 dB)
Distortion	<0,01 % (1 kHz, rated input/output)
Monaural Input	Line: -10 dBu, 10 kΩ, unbalanced, ø 6.3 mm phone jack (2P) Mic: -60 dBu, 1 kΩ, balanced, XLR3-pin connector Mic (Pad): -40 dBu, 1 kΩ, balanced, XLR3-pin connector
Stereo Input (L,R)	-10 dBu, 10 kΩ, unbalanced, RCA jack
Auxiliary Stereo Input	+4 dBu, 50 kΩ, unbalanced, ø 6.3 mm phone jack (2P)
Stereo Output	+4 dBu, 1 kΩ, unbalanced, ø 6.3 mm phone jack (2P)
Monaural Output (1,2)	+4 dBu, 1 kΩ, unbalanced, ø 6.3 mm phone jack (2P)
REC Output (L,R)	-10 dBu, 1 kΩ, unbalanced, RCA jack
Noise Level (IHF-A)	When all volume controls are in minimum position: • Stereo Output (L,R): -105 dBu or less • Monaural Output (1,2): -98 dBu or less When the stereo, monaural (1,2) are in maximum position: • Stereo Output (L,R): -94 dBu or less • Monaural Output (1,2): -95 dBu or less
Finish	Front Panel: Alumite, black / Case: Steel, black
Dimensions (W x H x D)	483 x 46 x 301.8 mm
Weight	3.8 kg

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04 PROSOUND /

Digital Processors / **DP-SP3**

Features

- Digital Speaker Processor for clear, high-quality and realistic sound, with a full sense of presence
- Essential audio processing tools: Compressor, Parametric Equalizer, Output Delay and Mute
- 10 filters on each input and 12 filters on each output
- Any combinations of parametric equalizer and high/low pass, and high/low shelving filters, as well as all-pass, notch filters and CD horn equalizer are possible
- 2 inputs & 6 outputs, processor can work with a 3-way multi-amp system

Applications

- Banquet halls
- Houses of worship
- Gymnasiums
- Medium-sized restaurants

Specifications

	DP-SP3
Power Source	220 – 240 V AC, 50 / 60 Hz
Power Consumption	25 W
Frequency Response	20 Hz – 20 kHz, ±1 dB
Sampling Frequency	96 kHz
Dynamic Range	Over 110 dB
Distortion	< 0.03 %, 1 kHz, +4 dB input/output (20 Hz – 20 kHz BPF)
Crosstalk	-80 dB or less, 1 kHz
Input	2 channels, +4 dBu (Max. +24 dBu), 10 kΩ, electronically-balanced, removable terminal block (3P)
Output	6 channels, +4 dBu (Max. +24 dBu), applicable load 600 Ω or more, electronically-balanced, removable terminal block (3P)
A/D, D/A Converter	24 bits
Signal Processing	Parametric equalizer: 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: 20 – 20 kHz, ±15 dB, Low-shelving filter: 20 – 500 Hz, ±15 dB, Horn equalizer: 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 dBu 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 – 5 s, Release time: 10 ms – 5 s
Delay	Delay time: 0 – 682.656 ms in 0.01 ms steps
Matrix	2 x 6
Function	Input PAD (-14dB) control, analog output attenuator (-∞ to 0 dB in 1 dB steps) control, EQ characteristic library for TOA speakers, input/output level indicator (4-point LED indicator), output MUTE switch x 6
Contact Inputs	4 channels, open voltage: 5 V DC, short-circuit current: 5 mA, removable terminal block (5P), control function: preset memory selection, volume control, and mute
Network	Network I/F: 1 channel of 10BASE-T/100 BASE-TX (auto-negotiation), RJ45 connector, connection via switching hub Network protocol: TCP/IP, Connection cable: Shielded Cat. 5 or higher twisted pair cable for LAN (Cat. 5-STP or better) Maximum cable length: 100 m (between DP-SP3 and switching hub)
Finish	Panel: Aluminium, hairline, black / Case: Surface-treated steel plate
Dimensions (W x H x D)	482 x 44 x 289 mm
Weight	3.1 kg

Digital Processors / **DP-K1**

Features

- Digital signal processor with max. 8 inputs and outputs
- Antiresonance function for 8 channels
- A variety of filters, dynamic (noise gate, compressor), delay, crossover, matrix
- Modular inputs and outputs for easy adjustment of the system
- Different input and output modules available
- Adjustment by PC via LAN possible
- Easy to use and many automatic functions
- Rack-mountable

Options

- D-921E, D-921F, D-922E, D-922F: Mic / Line Input Modules
- D-936R: Stereo Input Module
- D-923AE, D-937SP: Digital Input Modules
- D-971E, D-971M, D-971R: Analog Output Modules
- D-972AE, D-961SP: Digital Output Modules
- D-981, D-983: Control Modules

Applications

- Churches
- Stadiums
- Halls
- Conference rooms
- Convention centers
- Airports

Specifications

	DP-K1
Power Source	230 V, 50 / 60 Hz
Power Consumption	40 W
Frequency Response	20 Hz – 20 kHz, ±1 dB (+4 dBu input)
Inputs / Outputs	Up to 8 channels, modular (modules optional)
Equalizer / Filter	Parametric equalizer: 20 Hz – 20 kHz, ±12 dB, Q: 0,267 - 69,249 Filter: (total amount of filters depends on the number of input and output channels) 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, ±12 dB Low shelving filter: 20 – 500 Hz , ±12 dB Horn-Equalizer: 20 kHz, 0 to +18 dB (0.5 dB steps) Crossover filter: 20 Hz – 20 kHz, 6 dB/Oct, 12 dB/Oct, 18 dB/Oct, 24 dB/Oct (LR, BW, BE)
Compressor	(Compressor mode) threshold: -16 to +24 dB (1 dB steps); Compression ratio: 1:1, 2:1, 3:1, 4:1, 8:1, 12:1, 20:1, ∞:1 Attack time: 0,02 ms … 100 ms , release time: 10 ms - 5 s
Delay	Delay time: 0 … 682,6 ms (0,021 ms steps)
Matrix / Gain control	Matrix 8 × 8, Level control: -∞ to 0 dB (1 dB steps)
Presets	8
Other Functions	Key-lock
PC Software	OS: Windows 2000/XP/Vista (32-bit edition), Windows 7 (32/64 bit edition) Control via: LAN (Ethernet) 10/100 BASE-TX, auto negotiation, RJ45 connector
Front Panel Section	Preset memory recall knob, input signal indicator: green LED, output signal indicator: green LED
Module Slots (rear)	Input modules: 4, output modules: 2, remote control module: 1
Finish	Front: Aluminum, hair-line, black / Others: pre-coated steel plate, black, 30 % gloss
Dimensions (W x H x D)	482.6 × 132.6 × 320 mm
Weight	7.4 kg

Ambient Noise Controller / **DP-L2**

Multi-Route Unit & Multi Channel Monitor / **M-66 / MP-1216**

M-66

MP-1216

DP-L2

- Digital audio processor adjusts BGM / announce-
  ment sound volume to match changes of ambient
  noise
- Automatic and accurate input and output sound
  level adjustment
- Output excluded from ambient noise sensing
- Easy, quick installation and simple operation
- 1-unit size

Applications

- Airport check-in counters
- Boarding gates
- Shopping malls
- Restaurants or pubs
- Railway stations

M-66

- Can be operated as a 6-input-6-output microphone
  preamplifier / line driver or splitter / combiner
- Front panel switch for assigning signal
  configurations
- Mic/Line level selector switch and 20 dB PAD
  on each input channel for a wide range of precise
  signal settings from microphone to line levels
- Cascading multiple units for increasing the
  number of inputs and outputs
- Simultaneous use of multiple functions (i.e. different
  functions can be assigned to different channels)

MP-1216

- Multi Channel Monitor for 16 channels
- Allows visual and aural monitoring
- 2 units can be linked for up to 32 channels (with
  optional cable YA-8: 1 master monitor unit)
- 12-segment LED meter with calibrated scale for
  each input
- Audio monitoring of each channel through a built-
  in selector switch and loudspeaker
- All inputs balanced and transformer isolated

Applications

- Boardrooms
- Conference rooms
- Health clubs
- Restaurants

Specifications

	DP-L2
Power Source	220 – 240 V AC, 50 / 60 Hz
Power Consumption	20 W
Sampling Frequency	48 kHz
Frequency Response	20 Hz – 20 kHz, ± 1 dB
Dynamic Range	Over 108 dB (IHF-A weighted)
Distortion	< 0.006 %, 1 kHz, + 4 dB input/output (20 Hz – 20 kHz BPF)
Input	Sensor Input, Input 1 & 2 (removable terminal block)
Output	Monitor Output, Output 1 & 2 (removable terminal block 3 pins)
A/D, D/A Converter	24 bit
Signal Processing	Automatic level control, ambient noise control, maximum output signal level control, input level indicator, output level indicator
Other Features	Phantom power switch (sensor input), key lock function, ground lift switch (INPUT 1, INPUT 2), input/output bypass function in power off
Finish	Pre-coated steel plate, black, 30 % gloss
Dimensions (W x H x D)	482 x 44 x 303 mm
Weight	3.7 kg

Specifications

	M-66	MP-1216
Power Source	230 V AC, 50 / 60 Hz	230 V AC, 50 / 60 Hz
Power Consumption	12 W	25 W
Input	6 inputs, mic / line changeable, 2 kΩ, XLR-3-31 compatible (electrically balanced), -60 dBu (Mic), -10 dB (Line) Split Input: -10 dBu, 2 kΩ, XLR-3-31 compatible (electrically balanced), Mix Input: +4 dBu, 10 kΩ, XLR-3-31 compatible (electrically balanced), Input sensitivity selector switch: Input 1 to 6 (Line, Mic), Pad switch: Input 1 to 6, split input (20 dB)	Line level: +4 dB, transformer isolated, Low impedance speaker: 49 V, transformer isolated, High impedance speaker: 70 V, transformer isolated, Nominal Input Levels: Transformer isolated: +4 dB, 8 Ω: 49 V, 100 V
Output	6 outputs, +4 dBu (appropriate impedance not less than 600 Ω), Mix output: +4 dBu (impedance > 600 Ω), XLR-3-32 compatible, Bridging output: XLR 3-32 compatible (electrically balanced), Function selector switch: 1 to 6 (MIX / HA, Split)	Speaker output: Max. 3 W Headphone output: 8 Ω
Frequency Response	20 Hz – 20 kHz (+1, -3 dB)	-
Distortion	< 0,01 % (1 kHz, line level nominal input, output)	-
Noise	Output: Less than -100 dBu (band pass filter, vol. minimal)	-
Finish	Panel, case: Pre-coated steel plate, black, 30 % glossy / Security cover: acrylic, grey (smoke)	Front panel: Alumite, black
Dimensions (W x H x D)	482.6 x 88.4 x 177.8 mm	482.6 x 80.4 x 312.7 mm
Weight	3 kg	5.3 kg

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04 PROSOUND /

Digital Power Amplifiers / **DA-Series**

Top-of-the-line operation and performance efficiency.

The DA-Series multi-channel power amplifiers offer a wide choice of power ratings, advanced Class D amplification 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 venues.

| Conventional amps | DA-250 series |

Up to 20 amplifier channels on 5 units!
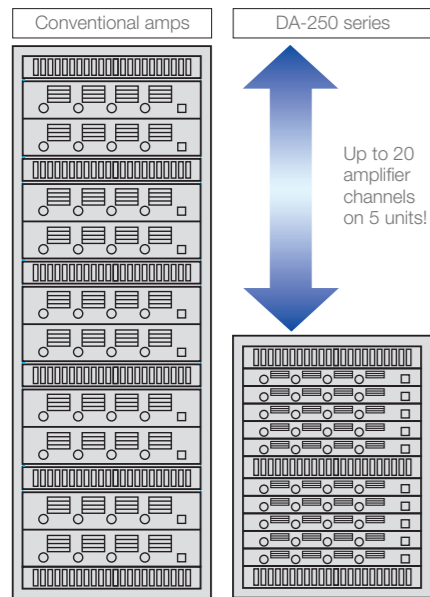
Comparison DA-250 vs. conventional multichannel amp

Features

• High efficiency
• High durability
• High reliability
• Independent power supply
• Lightweight and compact design

Applications

• Presentation & press conference rooms
• Restaurants
• Exhibition halls
• Sports facilities
• Multipurpose halls
• Houses of worship

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Digital Power Amplifiers / DA-Series / **DA-250F / DA-250FH**

Features

• 2 versions: 4 Ω (DA-250F) or 100 V (DA-250FH)
• Low power consumption and light weight
• Each channel with independent power supply
• Control covers eliminate tampering
• Low-noise constant speed fans
• Stacking possible
• Bridged mode possible
• Protection circuitry
• Pulse width modulation with controlled power supply

Options

• MT-251H: Matching Output Transformer

Applications

• DA-250F: for low impedance application and multi-zone application such as presentation and press conference rooms, restaurants, etc.
• DA-250FH for 70 V / 100 V: exhibition halls, sports facilities and gymnasiums, houses of worship, meeting halls

Specifications

	DA-250F	DA-250FH
Power Source	220 – 240 V AC, 50 / 60 Hz	
Number of Channels	4	
Total Output (all channels driven)	680 W (1 kHz, 8 Ω)	1,000 W (1 kHz, 4 Ω)
Power Output	4 x 250 W (4 Ω) / 4 x 170 W (8 Ω) / 2 x 500 W (8 Ω, bridged)	4 x 250 W (70 V / 100 V)
Power Consumption (IEC 60065)	200 W	
Frequency Response	20 Hz – 20 kHz, ±1 dB	50 Hz – 20 kHz, -3 dB, +1 dB
Distortion	0.1 % (1kHz)	
S/N Ratio (A weighted)	100 dB	
Input Impedance	10 kΩ (unbalanced), 20 kΩ (balanced)	
Controls	Volume control, LEDs: Indicator for each channel: input, output, peak, protection, power-on	
Connection	Inputs: Removable terminal block (electronically balanced), Outputs: Screw terminals (M4). For AWG 14-22	
Protection Circuit	Amplifier section: DC output, overheat protection, load shorting, overload current, maximum output; Power supply section: overheat protection, AC rush current	
Finish	Front: Aluminum, alumite process, black / Case: plated steel sheet	
Dimensions (W x H x D)	482 × 44 × 401.8 mm (EIA standard rack)	
Weight	6.8 kg	

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Digital Power Amplifiers / DA-Series / **DA-250D / DA-250DH**

Features

- 2 versions: 4 Ω (DA-250D) or 100 V (DA-250DH)
- Class D design 85 % efficient
- Independent power supply for each channel
- Light weight and compact
- Stack up to 5 units without open spaces between units
- Selectable stereo or bridge operation (DA-250D)
- Forced-air cooling system
- Low heat dissipation
- Comprehensive protection circuitry
- Removable dust filters for easy maintenance

Options

- MT-251H: Matching Output Transformer

Applications

- Arenas, stadiums
- Gymnasiums
- Health clubs
- Auditoriums
- Multi-purpose halls
- Convention centres
- Shopping malls
- Houses of worship
- Restaurants, bars or pubs

Specifications

	DA-250D	DA-250DH
Power Source	220 – 240 V AC, 50 / 60 Hz	
Number of Channels	2	2
Power Output	2 x 250 W (4 Ω) / 2 x 170 W (8 Ω)	2 x 250 W (100 V line, 40 Ω)
Power Consumption (EN standard)	120 W	
Frequency Response	20 Hz – 20 kHz, ±1dB	50 Hz – 20 kHz, -3 dB, +1 dB
Distortion	0.1 % (1kHz)	
S/N Ratio (A weighted)	100 dB	
Input Impedance	10 kΩ (electronically balanced)	
Controls	Volume level control (per channel), LEDs: Power, Indicator for each channel: input, output, peak, protection	
Connection	Input: Detachable terminal block (3 pins), XLR-3-31 / Output: screw terminals (M4)	
Protection Circuit	Overheat, short circuit, overload, unusual DC voltage output	
Finish	Front: Aluminum, alumite process, black / Case: plated steel sheet	
Dimensions (W x H x D)	482 × 44 × 401.8 mm (EIA standard rack)	
Weight	5.3 kg	

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Digital Power Amplifiers / DA-Series / **DA-550F / DA-500FH**

Features

- 2 versions: 4 Ω (DA-550F) or 100 V (DA-500FH)
- Independent power supply for each channel
- Light weight and compact
- Rack mountable with 2 units
- Stack up to 5 units without open spaces between units
- Selectable stereo or bridge operation (DA-550F)
- Forced-air cooling system
- Low heat dissipation
- Comprehensive protection circuitry
- Removable dust filters for easy maintenance

Options

- MT-251H: Matching Output Transformer

Applications

- Arenas, stadiums
- Gymnasiums
- Health clubs
- Auditoriums
- Multi-purpose halls
- Convention centres
- Shopping malls
- Houses of worship
- Restaurants, bars or pubs

Specifications

	DA-550F	DA-500FH
Power Source	220 – 240 V AC, 50 / 60 Hz	
Number of Channels	4	
Power Output	4 x 550 W (4 Ω) / 4 x 350 W (8 Ω) / 2 x 1100 W (8 Ω, bridged)	4 x 500 W (100 V, 20 Ω)
Power Consumption (EN standard)	480 W	460 W
Frequency Response	20 Hz – 20 kHz (-2 dB, +1 dB)	50 Hz – 20 kHz (-3 dB, +1 dB)
Distortion	0.1 % (1kHz)	
S/N Ratio (A weighted)	100 dB	
Input Impedance	10 kΩ (electronically balanced)	
Controls	Volume level control (per channel), LEDs : Power, Indicator for each channel: input, output, peak, protection	
Connection	Input: Detachable terminal block (3 pins), XLR-3-31 / Output: screw terminals (M4)	
Protection Circuit	Overheat, short circuit, overload, unusual DC voltage output	
Finish	Front: Aluminum, alumite process, black / Case: plated steel sheet	
Dimensions (W x H x D)	482 × 88.4 × 404.2 mm (EIA standard rack)	
Weight	9 kg	

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04 PROSOUND /

Line Arrays

Versatile operational and installation features enhance sound reinforcement applications.

Line Array Speaker Systems play an important role in providing high quality audio for medium sized venues that can range from places of worship, gymnasiums to various sports facilities and other problematic environments. TOA Line Array Speaker Systems are designed to perform optimally with ideal sound dispersion characteristics in spaces that pose difficulties for more conventional speaker systems. Available in different configurations and with a wide range of mounting possibilities to suit particular requirements precisely, the slim tower-configured speakers and modular speaker systems offer perfect solutions for difficult sound reinforcement problems that require effective coverage.

Our Line Array Speaker Systems are designed for permanent installations and available in slim, to-werconfigured or steereable active types. A wide range of mounting brackets enables flexible speaker mounting options for the best sound coverage characteristics.

Principle of Line Arrays vs. Standard Speaker

Features

- Designed to perform optimally with ideal sound dispersion characteristics in spaces that pose difficulties for more conventional speaker systems
- Available in different configurations
- Wide range of mounting possibilities

Applications

- Houses of worship
- Gymnasiums & other sport facilities
- Exhibition halls
- Multi-purpose halls
- Houses of worship
- Restaurants, bars or pubs
- Hotel lobbies

Line Arrays / Type H / SR-H2L / SR-H2S / SR-H3L / SR-H3S

EASE data

Features

- 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 technology creates ideal linear sound source
- Clear sound with reduced attenuation over distance
- Reflection-free and feedback resistant
- Curved speaker models for improved vertical dispersion

Options

- MT-S0301: Matching Transformer for high-impedance operation
- SR-TB3: Wall Tilt Bracket
- SR-WB3: Wall Mounting Bracket
- SR-FB3: Flying Bracket
- SR-EP3: Extension Plate
- SR-SA3: Stand Adapter
- ST-34B: Speaker Stand

Applications

- Auditoriums
- Convention centres
- Shopping malls
- Houses of worship
- Restaurants, bars or pubs
- Hotel lobbies

Specifications

	SR-H2L	SR-H2S	SR-H3L	SR-H3S
Power Handling Capacity	Continuous program: 180 W		Continuous program: 360 W	
Rated Impedance	8 Ω			
Sensitivity (1 W, 1 m)	92 dB	90 dB	95 dB	92 dB
Frequency Response	80 Hz – 18 kHz	90 Hz – 17 kHz	110 Hz – 18 kHz	90 Hz – 17 kHz
Speaker Component	7 cm cone-type x 9		7 cm 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, paint / Front grille: Punched steel plate, white, acrylic paint			
Dimensions (W x H x D)	84 x 668.4 x 115 mm	84 x 663.4 x 115 mm	84 x 1,186.4 x 115 mm	84 x 1,177.2 x 157 mm
Weight	4.4 kg	4.2 kg	7.6 kg	7.9 kg

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Line Arrays / Type S / **SR-S4L / SR-S4LWP / SR-S4S / SR-S4SWP**

SR-S4L / SR-S4LWP   SR-S4S / SR-S4SWP

Features

- 2-way line array speaker with 8 x 10 cm (4") woofers and 24 high-frequency drivers, installed vertically
- Sync-Drive technology creates ideal linear sound source
- Clear sound with reduced attenuation over distance
- Speakers are reflection-free and feedback resistant
- Splashproof versions (SR-S4LWP/SR-S4SWP)
- Bi-amp or single amp drive possible
- Wide variety of mounting brackets available

Options

- MT-S0601: Matching Transformer for high-impedance operation
- SR-FB4: Flying Bracket
- SR-EP4 / SR-EP4WP: Extension Plate
- SR-WB4 / SR-WB4WP: Wall Mounting Bracket
- SR-TB4WP / SR-TB4: Wall Tilt Bracket
- SR-SA4: Stand Adapter
- SR-PP4: Protection Pad

Applications

- Houses of worship
- Exhibition halls
- Multipurpose halls
- Gymnasiums & other sport facilities

Specifications

	SR-S4L	SR-S4LWP	SR-S4S	SR-S4SWP
Power Handling Capacity	Continuous program: 600 W			
Rated Impedance	8 Ω			
Sensitivity (1 W, 1 m)	94 dB		93 dB	
Frequency Response	70 Hz – 20 kHz			
Crossover Frequency	3.5 kHz			
Directivity Angle	Horizontal: 90°, Vertical: 0° (within the range of speaker height)		Horizontal: 90°, Vertical: 10°	
Speaker Component	Low frequency: 10 cm cone-type × 8, High frequency: 2.5 cm balanced dome-type × 24			
Input Connector	M5 screw terminal, distance between barriers: 12.2 mm and Neutrik NL4MP x 2 (usable cable connector: Neutrik NL4FC)	-	M5 screw terminal, distance between barriers: 12.2 mm and Neutrik NL4MP x 2 (usable cable connector: Neutrik NL4FC)	-
Connected Cable	-	Direct cable withdrawal from internal speaker: ø8.6 mm, conductor cross section: 1.25 mm², 4-core cable, 3 m	-	Direct cable withdrawal from internal speaker: ø8.6 mm, conductor cross section: 1.25 mm², 4-core cable, 3 m
Water Protection	-	IPX4	-	IPX4
Finish	Enclosure: MDF, white, paint Front grill: Punched steel plate, white, acrylic paint	Enclosure: Plywood, white, urethane coating Front grill: Punched stainless steel (SUS304), white, paint	Enclosure: MDF, white, paint Front grill: Punched steel plate, white, acrylic paint	Enclosure: Plywood, white, urethane coating Front grill: Punched stainless steel (SUS304), white, paint
Dimensions (W x H x D)	160 × 895 × 255 mm		160 × 892 × 303 mm	
Weight	16 kg			

Line Arrays / Type D / **SR-D8-M / SR-D8-S**

Features

- Steerable Active Line Array Speaker
- DSP Beam Steering with instant simulation and communication in real time
- A total of 16 speakers (in up to 4 stacks) can be controlled as a single unit via GUI-operated software
- A wealth of DSP functions, including gain, mute, compression, delay, auto-mixing, high/low pass filters, high/low shelving filters, and a notch filter
- Equipped with two analog audio input terminals and four digital audio input terminals for CobraNet connection, the speaker supports 6 x 2 matrix mixing
- Coverage: Horizontal - 90°; Vertical Beam Width - 45°; Verticle Beam Angle - ±45° (Adjustable via dedicated GUI software)

Options

- SR-D8WB: Wall Mounting Bracket
- SR-D8CS: Wall Mounting Bracket
- SR-D8FB: Fixing Bar
- SR-D8HB: Hoisting Bracket
- SR-D8EP: Extension Plate
- SR-D8CL: Wall Mounting Adapter

Applications

- Houses of worship
- Exhibition halls
- Multipurpose halls
- Gymnasiums & other sport facilities

Specifications

	SR-D8-M	SR-D8-S
Power Source	220 – 240 V AC, 50 / 60 Hz	
Power Consumption	315 W (Rated output), 72 W (Based on EN Standards)	320 W (Rated output), 72 W (Based on EN Standards)
Frequency Response	130 Hz – 20 kHz	
S/N Ratio	100 dB or more (A-weighted), DSP+Amplifier	
Amplication System	Class D, 8 channels	
Output	30 W, 1 channel (1 % THD+N)	
Max SPL	Max. 93 dB SPL (A-weighted, pink noise, 30 m)	
Line Input	2-channels, +4 dBu, 10 kΩ, electronically-balanced, removable terminal block (3P)	-
Finish	Enclosure: MDF, white, paint / Front grille: Punched steel plate, white, acrylic paint	
Dimensions (W x H x D)	160 x 895 x 255 mm	
Weight	21 kg	

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Line Arrays / **Accessories**

		Article number	Type H	Type S	Type D
	Wall Tilt Bracket	SR-TB3	•	-	-
	Wall Mounting Bracket	SR-WB3	•	-	-
	Flying Bracket	SR-FB3	•	-	-
	Extension Plate	SR-EP3	•	-	-
	Stand Adapter	SR-SA3	•	-	-
	Matching Transformer	MT-S0601	•	-	-
	Speaker Stand	ST-34B	•	-	-
	Flying Bracket	SR-FB4	-	•	-
	Extension Plate	SR-EP4	-	•	-
	Extension Plate, outdoor use	SR-EP4WP	-	•	-

Line Arrays / **Accessories**

		Article number	Type H	Type S	Type D
	Wall Mounting Bracket	SR-WB4	-	•	-
	Wall Mounting Bracket, outdoor use	SR-WB4WP	-	•	-
	Wall Tilt Bracket	SR-TB4	-	•	-
	Wall Tilt Bracket, outdoor use	SR-TB4WP	-	•	-
	Stand Adapter	SR-SA4	-	•	-
	Protection Pad	SR-PP4	-	•	-
	Wall Mounting Bracket	SR-D8WB	-	-	•
	Wall Mounting Bracket	SR-D8CS	-	-	•
	Fixing Bar	SR-D8FB	-	-	•
	Hoisting Bracket	SR-D8HB	-	-	•
	Extension Plate	SR-D8EP	-	-	•
	Wall Mounting Adapter	SR-D8CL	-	-	•

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04 PROSOUND /

Variable Arrays / **HX-5 Series**

Full area coverage and wider bandwidth sound.

The HX-5 is an innovative modular speaker design that incorporates the best characteristics of the traditional, cumbersome woofer enclosure combined with a CD horn-loaded high frequency driver and the full-range compact speaker enclosure without the drawbacks associated with each type. The HX-5 features remarkably easy to control coverage characteristics including problematic low frequencies and can be installed in a multitude of ways while maintaining a modern, unobtrusive appearance.

A system is configured by four preassembled modules with four LF drivers and twelve HF dome tweeters. This configuration allows the variable directivity control and low-frequency dispersion control comparable to use a large constant-directivity horn speaker. A choice of 4 directivity angles (15, 30, 45 and 60 degrees) can be employed as needed.

| 342 | 339 | 336 | Speaker module |

551 | 553 | 553

45° Mode | 30° Mode | 15° Mode | Mixed angle mode
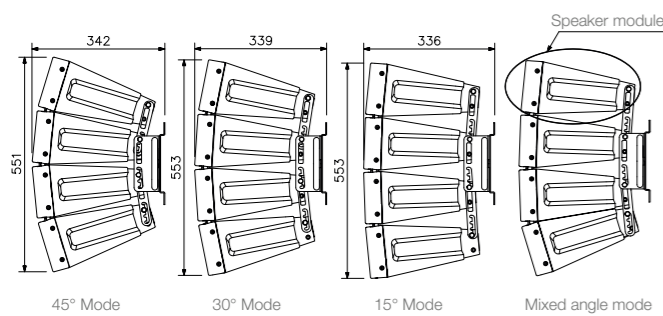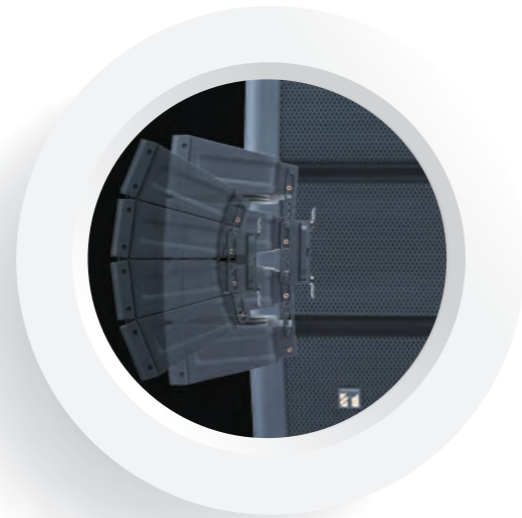
Features

- 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
- A wide variety of optional mounting brackets available

Applications

- Auditoriums
- Houses of worship
- Banquet halls
- Community centres
- Sport bars
- Shopping malls
- Boardrooms
- Gyms & health clubs

Variable Arrays / HX-5 Series / **HX-5B / HX-5W / HX-5B-WP / HX-5W-WP**

IPX4 | EASE data

Also available as EN certified version (page 69)

Features

- High power handling
- Splashproof versions (HX-5B-WP / HX-5W-WP)
- Parallel connectors - dual speakon and screw terminal
- Ball impact proof

Options

- FB-120B / FB-120W: Subwoofer
- Mounting options and accessories from page 189

Applications

- Auditoriums
- Houses of worship
- Banquet halls
- Community centres
- Sport bars
- Shopping malls
- Boardrooms
- Gyms & health clubs

Specifications

	HX-5B	HX-5W	HX-5B-WP	HX-5W-WP
Enclosure	Bass-reflex type		Sealed type	
Power Handling Capacity	Continuous pink noise: 200 W / Continuous program: 600 W			
Rated Impedance	8 Ω			
Sensitivity (1 W, 1 m)	96 dB (60° mode), 97 dB (45° mode), 98 dB (30° mode), 99 dB (15° mode)			
Frequency Response	70 Hz – 20 kHz (-10 dB) (60° mode) 75 Hz – 20 kHz (-10 dB) (45° mode) 80 Hz – 20 kHz (-10 dB) (30° mode) 85 Hz – 20 kHz (-10 dB) (15° mode)		95 Hz – 20 kHz (-10 dB) (60° mode) 100 Hz – 20 kHz (-10 dB) (45° mode) 105 Hz – 20 kHz (-10 dB) (30° mode) 110 Hz – 20 kHz (-10 dB) (15° mode)	
Crossover Frequency	4 kHz			
Directivity Angle	Horizontal: 100° (over 2 kHz), Vertical: 60° (over 800 Hz), 45° (over 1.2 kHz), 30° (over 1.6 kHz), 15° (over 3.2 kHz) variable			
Speaker Component	Low frequency: 12 cm cone-type x 4, High frequency: Balanced dome-type x 12			
Input Terminal	Speakon NL4MP x 2 and M4 screw terminal		-	
Speaker Cord	-		2-core cabtyre cord with diameter of 6 mm	
Water Protection	-		IP X4 (Install with every speaker module downward)	
Finish	Enclosure: Polypropylene, black or white / Punched net: Surface-treated steel plate, black or white			
Dimensions (W x H x D)	408 x 546 x 342 mm			
Weight	16 kg			

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Variable Arrays / HX-5 Series / **FB-120B / FB-120W**

EASE data

Features

- Compact subwoofer
- 30 cm (12") woofer
- Ideal in conjunction with HX-5 speaker
- Extremely wide frequency range
- For rigging, floor-, wall-, corner- or ceiling-mount
- 600 W high-power subwoofer system
- Carry handle
- Speakon® connector
- Cascading of multiple units

Options

- HY-PF1B / HY-PF1W: Rigging Frame

Applications

- Clubs
- Stages for live performances
- Houses of worship
- Auditoriums
- Youth centers
- Multi-purpose halls

Specifications

	FB-120B	FB-120W
Rated Input	Continuous pink noise: 200 W / Continuous program: 600 W	
Impedance	8 Ω	
Sensitivity (1 W, 1 m)	90 dB at installation in free sound field, 96 dB at installation in 1/2 free sound field	
Frequency Response	40 Hz – 1.2 kHz (-10 dB)	
Speaker Component	30 cm cone-type speaker	
Input Terminal	Speakon NL4MP x 2 and M4 screw terminals	
Finish	Enclosure plywood, metal front grille black	Enclosure plywood, metal front grille white
Dimensions (W x H x D)	408 × 408 × 450 mm	
Weight	15 kg	

Variable Arrays / HX-5 Series / **Mounting Options**

HY-PF1B / HY-PF1W / HY-PF1WP

Hanging horizontally   Hanging vertically with subwoofer
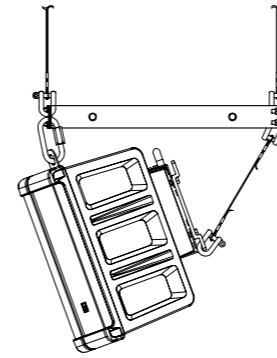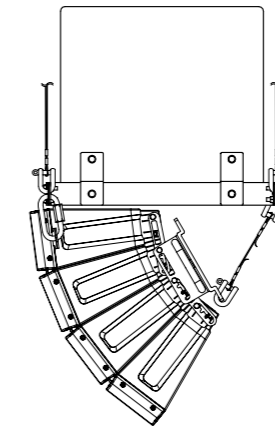
HY-CN1B / HY-CN1W / HY-CN1BWP / HY-CN1WWP

Two speakers connected
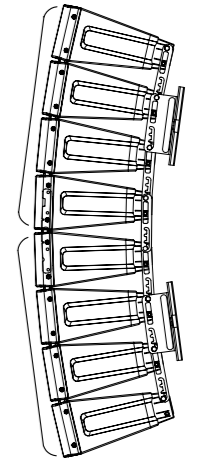
HY-CW1B / HY-CW1W / HY-CW1WP
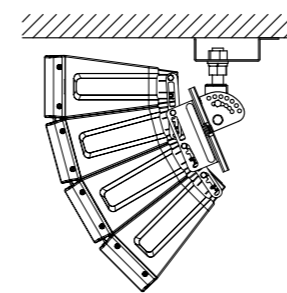
On the ceiling vertically   On the ceiling horizontally
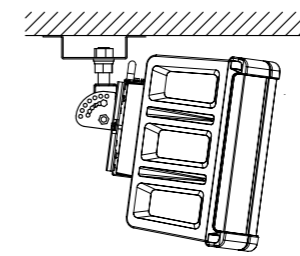
HY-ST1

On the stand
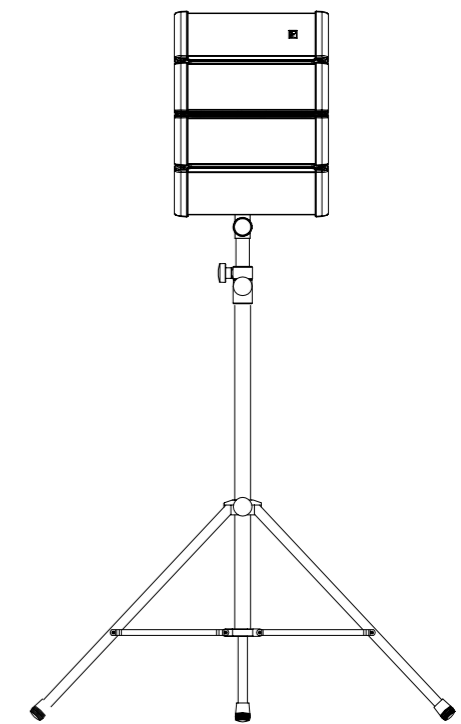
HY-WM1B / HY-WM1W / HY-WM1WP
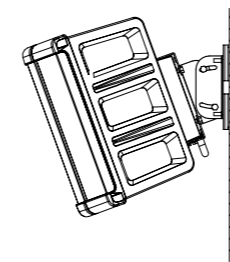
On the wall vertically   On the wall horizontally
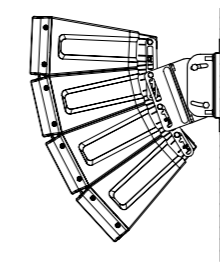
HY-WM2B / HY-WM2W / HY-WM2WP
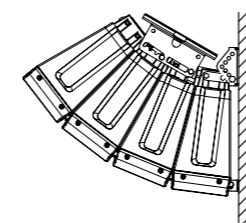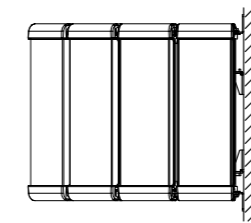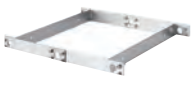
On the wall vertically   On the wall horizontally   On the ceiling vertically

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Variable Arrays / HX-5 Series / **Accessories**

		Article number
	Rigging Frame, black	HY-PF1B
	Rigging Frame, white	HY-PF1W
	Rigging Frame, outdoor use	HY-PF1WP
	Ceiling Mounting Bracket, black	HY-CW1B
	Ceiling Mounting Bracket, white	HY-CW1W
	Ceiling Mounting Bracket, outdoor use	HY-CW1WP
	Wall Mounting Bracket, black	HY-WM1B
	Wall Mounting Bracket, white	HY-WM1W
	Wall Mounting Bracket, outdoor use	HY-WM1WP

Variable Arrays / HX-5 Series / **Accessories**

		Article number
	Wall Mounting Bracket, black	HY-WM2B
	Wall Mounting Bracket, white	HY-WM2W
	Wall Mounting Bracket, outdoor use	HY-WM2WP
	Extension Bracket, black	HY-CN1B
	Extension Bracket, white	HY-CN1W
	Extension Bracket, outdoor use, black	HY-CN1BWP
	Extension Bracket, outdoor use, white	HY-CN1WWP
	Speaker Stand Adapter	HY-ST1
	Matching Transformer	MT-200

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04 PROSOUND /

Variable Arrays / **HX-7 Series**

Powerful & compact variable dispersion line array with flexible installation options.

The **HX-7** is a variable dispersion line array with SYNC-Drive™ waveguide technology. Thanks to its award winning enclosure design, employing four modules per unit, the HX-7 allows precise adjustment of sound dispersion angles of 0 - 15 - 30 - 45 and 60 degrees. The line array offers pristine clarity in a wide range of applications from sports venues, auditoriums, concert halls and challenging houses of worship. With the HX-7 you're getting affordable quality and stellar performance.

Five Stages
Adjustable dispersion angle 0,15,30,45 and 60 degrees

0°   45°

Controlled dispersion   Wider coverage
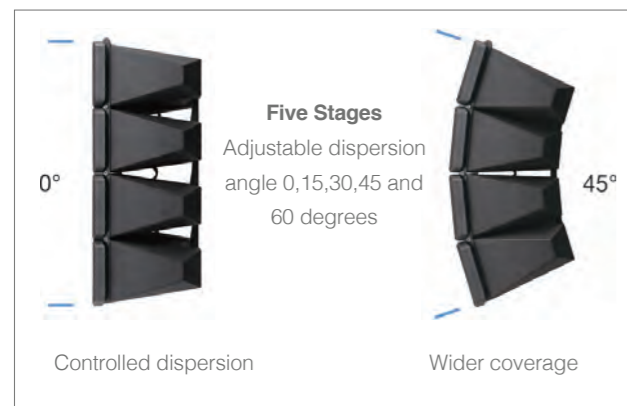
Features

- Meets the need for powerful audio
- Increases coverage and enhances intelligibility
- Offers ease of installation
- Multi-unit configuration

Applications

- Stadiums / arenas
- Houses of worship
- Theatres
- Indoor sports facilities
- Auditoriums

Variable Arrays / HX-7 Series / **HX-7B / HX-7W / HX-7B-WP / HX-7W-WP**

IPX4 EASE data

Features

- High power handling
- Speaker design consists of four integrated modules that can be adjusted individually to optimize the vertical dispersion angle
- Built-in isophasic wavefront control horn with compression driver ensures precise HF control and superior reproduction of HF sounds
- 0° mode facilitates the most effective line array set-up
- Easily adjustable vertical dispersion angle

Options

- FB-150B / FB-150W: Subwoofer
- Mounting options and accessories from page 195

Applications

- Stadiums / arenas
- Houses of worship
- Theatres
- Indoor sports facilities
- Auditoriums

Specifications

	HX-7B / HX-7W	HX-7B-WP / HX-7W-WP
Enclosure	Bass-reflex type	Sealed type
Power Handling Capacity	Continuous pink noise: 250 W (IEC60268-5: 350 W) / Continuous program: 750 W	
Rated Impedance	8 Ω	
Sensitivity (1 W, 1 m)	100 dB	
Frequency Response	75 Hz – 20 kHz	105 Hz – 20 kHz
Crossover Frequency	1.7 kHz	
Directivity Angle	Horizontal: 100°, Vertical: Depending on directivity angle mode	
Speaker Component	Low frequency: 13 cm cone-type x 8 High frequency: Wave front control horn with compression driver x 4	
Input Terminal	Speakon NL4MP x 2 and M4 screw terminal, distance between barriers: 9 mm (0.35")	M4 screw terminal, distance between barriers: 9 mm (0.35")
Water Protection	-	IPX4 (Install with every speaker module tilted downward from the horizontal.)
Finish	Enclosure: Polypropylene, black or white (HX-7B/W) Punched net: Surface-treated steel plate, black or white (HX-7B/W), paint / Hanging bracket: Steel plate, t3.0, black or white (HX-7B/W), paint	Enclosure: Polypropylene, black or white (HX-7B/W-WP), Punched net: Surface-treated steel plate, black & white (HX-7B/W-WP), rust proof coating
Dimensions (W x H x D)	497 x 664 x 274 mm	
Weight	30 kg	

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Variable Arrays / HX-7 Series / **FB-150B / FB-150W**

EASE data

Features

- Compact subwoofer
- High power 38 cm (15") woofer
- Ideal in conjunction with HX-7 speaker
- Perfect for reproducing dynamic low-frequency sound for both permanent and temporary installations

Options

- HY-PF7W / HY-PF7B: Rigging Frame

Applications

- Clubs
- Stages for live performances
- Houses of worship
- Auditoriums
- Youth centers
- Multi-purpose halls

Specifications

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

Variable Arrays / HX-7 Series / **Mounting Options**

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

HY-WM7W / HY-WM7B
On the wall
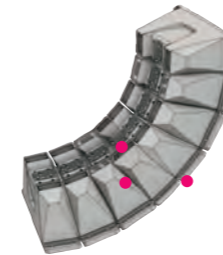
HY-60DW / HY-60DW-WP / HY-60DB / HY-60DB-WP
Dispersion angle 60 degrees

HY-TM7W-WP / HY-TM7B-WP
On building structures
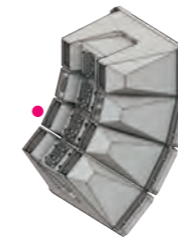
HY-PF7W / HY-PF7B
Hanging vertically with subwoofer
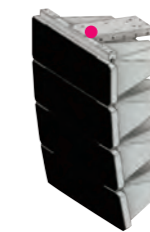
HY-MS7W-WP / HY-MS7B-WP
On undereave walls

HY-VM7W / HY-VM7B
On the ceiling

HY-ST7
On the stand

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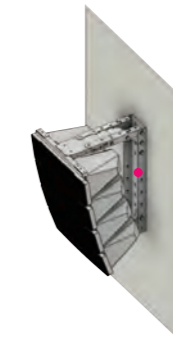
Variable Arrays / HX-7 Series / **Accessories**

		Article number
	Speaker Connection Bracket, white	HY-CN7W HY-CN7W-WP
	Speaker Connection Bracket, black	HY-CN7B HY-CN7B-WP
	Angle Adjustment Bar, white Allows the dispersion angle 60 degrees.	HY-60DW HY-60DW-WP
	Angle Adjustment Bar, black Allows the dispersion angle 60 degrees.	HY-60DB HY-60DB-WP
	Rigging Frame, white	HY-PF7W
	Rigging Frame, black	HY-PF7B
	Rigging Bracket, white	HY-VM7W
	Rigging Bracket, black	HY-VM7B

Variable Arrays / HX-7 Series / **Accessories**

		Article number
	Wall Mounting Bracket, white	HY-WM7W
	Wall Mounting Bracket, black	HY-WM7B
	Rigging Bracket, white, outdoor use	HY-TM7W-WP
	Rigging Bracket, black, outdoor use	HY-TM7B-WP
	Wall Mounting Bracket, white, outdoor use	HY-MS7W-WP
	Wall Mounting Bracket, black, outdoor use	HY-MS7B-WP
	Matching Transformer Adapter	HY-MT7
	Speaker Stand Adapter	HY-ST7

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Coaxial Arrays / HS-Series / **HS-120B/W / HS-1200BT/WT / HS-150B/W / HS-1500BT/WT**

EASE data

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

- 12" LF speaker
- Well-controlled sound coverage: 90° horizontal x 40° vertical
- Easy to carry and easy to install, with handle for easy transportability
- Twin input terminal connections (Speakon® and screw terminals) for fixed and mobile installation
- Size and weight have been reduced thanks to the use of the array tweeter
- Can be used as a floor monitor

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

- 15" LF speaker
- Well-controlled sound coverage: 90° horizontal x 40° vertical
- Easy to carry and easy to install, with handle for easy transportability
- Twin input terminal connections (Speakon® and screw terminals) for fixed and mobile installation
- Size and weight have been reduced thanks to the use of the array tweeter
- Can be used as a floor monitor

Applications

- Restaurants
- Pubs
- Conference rooms
- Lecture halls
- Schools
- Gyms & health clubs

Options

- HY-1200HB / HY-1200HW: Wall / Ceiling Mounting Bracket, horizontal orientation
- HY-1200VB / HY-1200VW: Wall / Ceiling Mounting Bracket, vertical orientation
- HY-W0801 / HY-W0801W: Wall Mounting Bracket
- ST-34B: Speaker Stand

Options

- HY-1500HB / HY-1500HW: Wall / Ceiling Mounting Bracket, horizontal orientation
- HY-1500VB / HY-1500VW: Wall / Ceiling Mounting Bracket, vertical orientation
- HY-W0801 / HY-W0801W: Wall Mounting Bracket
- ST-34B: Speaker Stand

Specifications

	HS-120B / HS-120W	HS-1200BT / HS-1200WT	HS-150B / HS-150W	HS-1500BT / HS-1500WT
Power Handling Capacity	Continuous pink noise: 100 W, Continuous program: 300 W			
Rated Impedance	8 Ω	8 Ω, 100 V: 170 Ω (60), 330 Ω (30), 670 Ω (15 W)	8 Ω	8 Ω, 100 V: 170 Ω (60), 330 Ω (30), 670 Ω (15 W)
Sensitivity (1 W, 1 m)	97 dB		98 dB	
Frequency Response	80 Hz – 20 kHz	70 Hz – 20 kHz		60 Hz – 20 kHz
Speaker Component	30 cm cone-type, Balanced dome-type x 6		38 cm cone-type, balanced dome-type x 6	
Connection	Neutrik NL4MP Speakon and M4 screw terminal, distance between barriers: 9 mm			
Finish	Polypropylene, black (HS-120B) or white (HS-120W)			
Dimensions (W x H x D)	361 x 448 x 320 mm		451 x 560 x 400 mm	
Weight	8.5 kg	10 kg	12 kg	14 kg

Coaxial Arrays / HS-Series / **Accessories**

		Article number	HS-120B / HS-1200BT	HS-120W / HS-1200WT	HS-150B / HS-1500BT	HS-150W / HS-1500WT
	Wall / Ceiling Mounting Bracket, black • Horizontal orientation	HY-1200HB	•	-	-	-
	Wall / Ceiling Mounting Bracket, white • Horizontal orientation	HY-1200HW	-	•	-	-
	Wall / Ceiling Mounting Bracket, black • Vertical orientation	HY-1200VB	•	-	-	-
	Wall / Ceiling Mounting Bracket, white • Vertical orientation	HY-1200VW	-	•	-	-
	Wall / Ceiling Mounting Bracket, black • Horizontal orientation	HY-1500HB	-	-	•	-
	Wall / Ceiling Mounting Bracket, white • Horizontal orientation	HY-1500HW	-	-	-	•
	Wall / Ceiling Mounting Bracket, black • Vertical orientation	HY-1500VB	-	-	•	-
	Wall / Ceiling Mounting Bracket, white • Vertical orientation	HY-1500VW	-	-	-	•
	Wall Mounting Bracket, black • in combination with HY-1200 / HY-1500 series brackets	HY-W0801	•	-	•	-
	Wall Mounting Bracket, white • in combination with HY-1200 / HY-1500 series brackets	HY-W0801W	-	•	-	•
	Speaker Stand • in combination with HY-1200 / HY-1500 series brackets	ST-34B	•	•	•	•

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Design Speakers / **F-Series**

Compact two-way speaker designed for high efficiency, wide range and high power input handling capability.

The F-Series comprise a two-way speaker line of compact units offering wide frequency response and higher, more powerful performance. These highly adaptable speaker systems are intended to meet the requirements of a wide range of venues and applications.

For clear, wide-area sound coverage, the series include wide dispersion-angle high-frequency horns. High-impedance and low-impedance models are available. Low impedance models come with separate HF and LF protection circuitry. High impedance models have a rear-panel rotary control for making impedance settings that optimally match amplifier and speaker performance.

The speaker units have a design that combines stylishness and a high degree of performance-enhancing rigidity. Brackets for easy speaker-stand, wall and ceiling installation are included, and there are also optionally available brackets for more challenging installation venues and sound reinforcement applications. Push-in terminals make connections quick and easy.

Features

- 3 different versions available: Low impedance, high impedance and weatherproof version
- 2-way speaker with high quality woofer and balanced dome tweeter
- Octagonal horn for clear, wide-area sound coverage
- Built-in speaker protection for low impedance models
- Easy impedance selection by rotary switch
- Great variety of brackets available
- Speaker bracket, joint bracket, wall bracket, bracket fixing screw included

Applications

- Supermarkets
- Shopping malls
- Restaurants & bars
- Public buildings & schools

Design Speakers / F-Series / **F-1000B/W / F-1000BT/WT / F-1000BTWP/WTWP**

IPX4   EASE data

Also available as EN certified version (page 68)

Features

- Compact wide-dispersion speaker
- Up to 90 W continuous program (F-1000B / F-1000W)
- Dispersion angle of 90° x 90°
- 2-way speaker with high quality 10 cm woofer and balanced dome tweeter
- Paintable
- Covered rear-mounted terminal block (WP version)

Options

- HY-CL10B: Cluster Bracket, black
- HY-CM10B: Wall / Ceiling Bracket, black
- HY-CM10W: Wall / Ceiling Bracket, white
- ST-16A: Speaker Stand
- HB-1: Subwoofer

Applications

- Supermarkets
- Shopping malls
- Restaurants & bars
- Public buildings & schools

Specifications

	F-1000B / F-1000W	F-1000BT / F-1000WT	F-1000BTWP / F-1000WTWP
Power Handling Capacity	30 W (continuous pink noise) 90 W (continuous program)	-	
Rated Input	-	15 W (100 V)	
Rated Impedance	8 Ω	100 V (15 / 5 / 3 / 1 W), 70 V (15 / 7.5 / 2.5 / 1.5 / 0.5 W)	
Sensitivity (1 W, 1 m)	87 dB		
Frequency Response	85 Hz – 20 kHz		
Speaker Component	Low: 10 cm cone-type, High: 2.5 cm balanced dome-type		
Water Protection	-	IPX4	
Connection	Clamp terminal		
Finish	Enclosure: HIPS resin, black or white / Punched net: Surface-treated steel plate, black or white, paint		
Dimensions (W x H x D)	130 x 202 x 131 mm		
Weight	1.8 kg	2 kg	

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Design Speakers / F-Series / **F-1300B/W / F-1300BT/WT / F-1300BTWP/WTWP**

IPX4 **EASE data**

Also available as EN certified version (page 68)

Features

- Compact wide-dispersion speaker
- Up to 150W continuous program (F-1300B / F-1300W)
- Dispersion angle of 90° x 90°
- 2-way speaker with high quality 13 cm woofer and balanced dome tweeter
- Paintable
- Covered rear-mounted terminal block (WP version)

Options

- HY-CL10B: Cluster Bracket, black
- HY-CM10B: Wall / Ceiling Bracket, black
- HY-CM10W: Wall / Ceiling Bracket, white
- ST-16A: Speaker Stand
- FB-120B: Subwoofer, black
- FB-120W: Subwoofer, white

Applications

- Supermarkets
- Shopping malls
- Restaurants & bars
- Public buildings & schools

Specifications

	F-1300B / F-1300W	F-1300BT / F-1300WT	F-1300BTWP / F-1300WTWP
Power Handling Capacity	50W (continuous pink noise) 150W (continuous program)	-	
Rated Input	-	30W (100V)	
Rated Impedance	8Ω	100V (30 / 10 / 3 / 1W), 70V (30 / 15 / 5 / 1.5 / 0.5W)	
Sensitivity (1W, 1m)	90dB		
Frequency Response	80Hz – 20kHz		
Speaker Component	Low: 13cm cone-type, High: 2.5cm balanced dome-type		
Water Protection	-		IPX4
Connection	Clamp terminal		
Finish	Enclosure: HIPS resin, black or white / Punched net: Surface-treated steel plate, black or white, paint		
Dimensions (W x H x D)	162 x 250 x 161 mm		
Weight	3.1 kg	3.6 kg	

Design Speakers / F-Series / **F-2000B/W / F-2000BT/WT / F-2000BTWP/WTWP**

IPX4 **EASE data**

Also available as EN certified version (page 68)

Features

- Compact wide-dispersion speaker
- Up to 180W continuous program (F-2000B / F-2000W)
- Dispersion angle of 110° x 100°
- Easily mountable 80° x 80° horn adapter for increased dispersion control included
- 2-way speaker with high quality 20 cm woofer and balanced dome tweeter
- Paintable
- Covered rear-mounted terminal block (WP version)

Options

- HY-CL20B: Cluster Bracket, black
- HY-CM20B: Wall / Ceiling Bracket, black
- HY-CM20W: Wall / Ceiling Bracket, white
- ST-16A: Speaker Stand
- FB-120B: Subwoofer, black
- FB-120W: Subwoofer, white

Applications

- Supermarkets
- Shopping malls
- Restaurants & bars
- Public buildings & schools

Specifications

	F-2000B / F-2000W	F-2000BT / F-2000WT	F-2000BTWP / F-2000WTWP
Power Handling Capacity	60W (continuous pink noise) 180W (continuous program)	-	
Rated Input	-	60W	
Rated Impedance	8Ω	100V (60 / 30 / 15 / 3W), 70V (60 / 30 / 15 / 7.5 / 1.5W)	
Sensitivity (1W, 1m)	92dB		
Frequency Response	65Hz – 20kHz		
Speaker Component	Low: 20cm cone-type, High: 2.5cm balanced dome-type		
Water Protection	-		IPX4
Connection	Clamp terminal		
Finish	Enclosure: HIPS resin, black or white / Punched net: Surface-treated steel plate, black or white, paint		
Dimensions (W x H x D)	244 x 373 x 235 mm		
Weight	6.5 kg	7.4 kg	

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Design Speakers / F-Series / **Mounting Options & Accessories**

Cluster Mounting

Wall Mounting
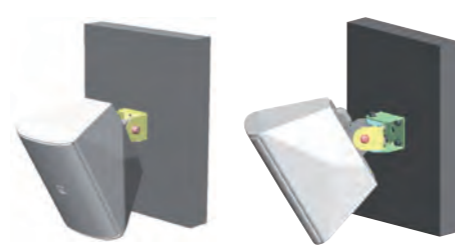
Ceiling Mounting
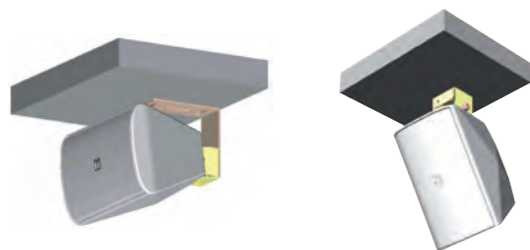
Stand Mounting

Matching Subwoofers		Article number	F-1000	F-1300	F-2000
Subwoofer, white Details see page 133		HB-1	•	–	–
Subwoofer, black Details see page 188		FB-120B	–	•	•
Subwoofer, white Details see page 188		FB-120W	–	•	•

Design Speakers / F-Series / **Accessories**

		Article number	F-1000	F-1300	F-2000
	Cluster Bracket, black	HY-CL10B	•	•	–
	Wall / Ceiling Bracket, black	HY-CM10B	•	•	–
	Wall / Ceiling Bracket, white	HY-CM10W	•	•	–
	Cluster Bracket, black	HY-CL20B	–	–	•
	Wall / Ceiling Bracket, black	HY-CM20B	–	–	•
	Wall / Ceiling Bracket, white	HY-CM20W	–	–	•
	Speaker Stand	ST-16A	•	•	•

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High Performance Speakers / **SR-F05**

Features

- Full Range Bass Reflex System
- Trapezoidal shape
- For both on-the-road and fixed installation
- Ideal in combination with the subwoofer SR-L05
- High power handling capacity (450 W)
- High quality sound
- Heavy duty construction and long-term reliability
- HF compression driver with titanium diaphragm mounted on a 90° x 40° CD-horn
- Low loss passive crossover network

Options

- SR-L05: Subwoofer
- SR-L09: Subwoofer

Applications

- Clubs
- Stages for live performances
- Houses of worship
- Auditoriums
- Youth centers
- Multi-purpose halls

Specifications

	SR-F05
Enclosure	Bass-reflex type
Rated Input	150 W (Continuous Program: 450 W)
Dispersion	90° x 40°
Sensitivity (1 W, 1 m)	99 dB (Peak SPL at 1 m: 131 dB)
Frequency Response	60 Hz – 18 kHz
Crossover Frequency	2 kHz (passive)
Speaker Component	25 cm cone speaker, HF CD-Horn
Connection	2x Neutrik NL4MP Speakon and M5 screw terminal
Finish	Enclosure: MDF with rugged epoxy paint, dark grey, black front grille
Dimensions (W x H x D)	316 x 445 x 242 mm
Weight	17 kg

High Performance Speakers / **SR-L05 / SR-L09**

SR-L05

SR-L09

Features

- Subwoofer for mobile application as well as fixed installations
- High power handling capacity
- Very low frequency response
- Heavy duty construction and long-term reliability
- 38 cm (15") woofer providing an ultra-long stroke of the cone (40 mm) for low distortion in super low frequencies
- 2 handles on each side (SR-L09)

Options

- SR-F05: High Performance Speakers

Applications

- Clubs
- Stages for live performances
- Houses of worship
- Auditoriums
- Youth centers
- Multi-purpose halls

Specifications

	SR-L05	SR-L09
Enclosure	Bass-reflex type	
Rated Input	150 W (Continuous Program: 450 W)	300 W (Continuous Program: 900 W)
Impedance	8 Ω	4 Ω
Sensitivity (1 W, 1 m)	93 dB (Peak SPL at 1 m: 125 dB)	96 dB (Peak SPL at 1 m: 131 dB)
Frequency Response	35 Hz – 1 kHz	
Subwoofer	1 x 38 cm cone-type	2 x 38 cm cone-type
Connection	1x Neutrik NL4MP Speakon and M5 screw terminal	
Finish	Enclosure: Plywood, paint, black	
Dimensions (W x H x D)	452 x 629 x 502 mm	829 x 629 x 606 mm
Weight	36 kg	67 kg

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High Performance Speakers / **SR-C8S / SR-C8SWP / SR-C8L / SR-C8LWP**

SR-C8S / SR-C8SWP

SR-C8L / SR-C8LWP

IPX4 EASE data

Features

- Sync-Drive wave guide technology
- Uniform, high frequency sound field with excellent sound clarity and minimal interference
- Phase wave-front control technology for a high-frequency sound range that is attenuation-free and high fidelity
- Adjustable sound coverage by connecting a number of speakers and combinig speakers with different dispersion angles
- Feedback resistant - reflection-free operation
- Single or bi-amp mode
- Drivers can be quickly replaced from the rear of the speaker enclosure

Options

- SR-C15B / SR-C15BWP: Subwoofer
- SR-CL8: Cluster Bracket
- SR-RF8: Rigging Frame
- SR-RF8WP: Weatherproof Rigging Frame
- SR-SB8: Rigging Support Bracket
- SR-TP8: Tilt Joint Bracket

Applications

- Clubs
- Stages for live performances
- Houses of worship
- Auditoriums
- Youth centers
- Multi-purpose halls

Specifications

	SR-C8S	SR-C8SWP	SR-C8L	SR-C8LWP
Enclosure	Bass-reflex type			
Power Handling Capacity	Continuous program: 360 W (single-amp mode) / low frequency: 360 W, high frequency: 180 W (bi-amp mode)			
Rated Impedance	16 Ω (single-amp mode), low frequency: 16 Ω, high frequency: 16 Ω (bi-amp mode)			
Sensitivity (1 W, 1 m)	98 dB (single-amp mode); low: 95 dB; high: 110 dB (bi-amp mode)			
Frequency Response	65 Hz – 20 kHz (when equalized at recommended parameters)			
Crossover Frequency	1600 Hz (when equalized at recommended parameters)			
Directivity Angle	Horizontal: 110°, vertical: 15°		Horizontal: 110°, vertical: 5°	
Speaker Component	Low frequency: 20 cm cone-type / High frequency: Wave-front control horn + compression drivers × 2			
Input Connector	M5 screw terminal, distance between barriers: 12.2 mm and Neutrik NL4MP × 2	Direct cable, 3 m	M5 screw terminal, distance between barriers: 12.2 mm and Neutrik NL4MP × 2	Direct cable, 3 m
Water Protection	-	IPX4	-	IPX4
Finish	Enclosure: Plywood black, paint Front grill: Punched steel plate, black, acrylic paint	Enclosure: Plywood, black, urethane coating Front grill: Punched stainless steel, black, paint	Enclosure: Plywood black, paint Front grill: Punched steel plate, black, acrylic paint	Enclosure: Plywood, black, urethane coating Front grill: Punched stainless steel, black, paint
Dimensions (W x H x D)	526.6 × 293 × 294 mm		526.6 × 293 × 296 mm	
Weight	16 kg		17 kg	

High Performance Speakers / **SR-C15B / SR-C15BWP**

IPX4 EASE data

Features

- 38 cm (15") subwoofer
- Uniform, high frequency sound field
- Input connectors include screw terminal connections and two Neutrik NL4 type sockets
- High power handling
- Enclosure equipped with M8 threaded steel plates for the secure attachment of optional accessory brackets
- Accessory brackets for suspension and stand mounting

Options

- SR-C8S / SR-C8SWP / SR-C8L / SR-C8LWP: High Performance Speakers
- SR-CL8: Cluster Bracket
- SR-RF8: Rigging Frame
- SR-RF8WP: Weatherproof Rigging Frame
- SR-SB8: Rigging Support Bracket
- SR-TP8: Tilt Joint Bracket

Applications

- Clubs
- Stages for live performances
- Houses of worship
- Auditoriums
- Youth centers
- Multi-purpose halls

Specifications

	SR-C15B	SR-C15BWP
Enclosure	Bass-reflex type	
Power Handling Capacity	Continuous program: 450 W	
Rated Impedance	8 Ω	
Sensitivity (1 W, 1 m)	93 dB	
Frequency Response	40 – 400 Hz (when equalized at recommended parameters)	
Speaker Component	38 cm cone-type	
Input Connector	M5 screw terminal, distance between barriers: 12.2 mm and Neutrik NL4MP x 2	-
Connected Cable	-	Direct cable withdrawal from internal speaker: ø8.6 mm conductor cross section: 1.25 mm², 4-core cable, 3 m
Water Protection	-	IPX4
Finish	Enclosure: Plywood, black, urethane paint, Front grille: Punched steel plate, black, paint	Enclosure: Plywood, black, urethane coating, Front grille: Punched stainless steel plate, black, paint
Dimensions (W x H x D)	526.6 × 594.8 × 550 mm	
Weight	41 kg	

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High Performance Speakers / **SR-A12L / SR-A12LWP / SR-A12S / SR-A12SWP**

SR-A12L / SR-A12LWP

SR-A12S / SR-A12SWP

EASE data

Features

- Compact and powerful 2-way modular speaker units that can be used in multiple configurations
- High-performance driver units
- Wavefront control that functions to obtain the best possible performance from the high frequency drivers
- Adjustable sound coverage through two speaker configurations
- Simple maintenance – complete driver replacement is possible from the speaker's rear

Options

- SR-RF12 / SR-RF12WP: Rigging Frame
- SR-A18B: Subwoofer

Applications

- Clubs
- Stages for live performances
- Houses of worship
- Auditoriums
- Youth centers
- Multi-purpose halls

Specifications

	SR-A12L	SR-A12LWP	SR-A12S	SR-A12SWP
Enclosure	Bass-reflex type			
Power Handling Capacity	Continuous program: Low frequency: 450 W, High frequency: 180 W			
Rated Impedance	Low frequency: 8 Ω, High frequency: 16 Ω			
Sensitivity (1 W, 1 m)	Low frequency: 98 dB High frequency: 110 dB		Low frequency: 98 dB High frequency: 109 dB	
Frequency Response	50 Hz – 20 kHz			
Crossover Frequency	1 kHz			
Directivity Angle	Horizontal: 90°, Vertical: 5°		Horizontal: 90°, Vertical: 15°	
Speaker Component	Low frequency: 30 cm cone-type High frequency: Wave front control horn 90° (horizontal) × 5° (vertical) + compression driver × 2		Low frequency: 30 cm cone-type High frequency: Wave front control horn 90° (horizontal) × 15° (vertical) + compression driver × 2	
Input Connector	M5 screw terminal, distance between barriers: 12.2 mm and Neutrik NL4MP x 2 (usable cable connector: Neutrik NL4FC)	Direct cable withdrawal from internal speaker: ø8.6 mm, conductor cross section: 1.25 mm², 4-core cable, 3 m	M5 screw terminal, distance between barriers: 12.2 mm and Neutrik NL4MP x 2 (usable cable connector: Neutrik NL4FC)	Direct cable withdrawal from internal speaker: ø8.6 mm, conductor cross section: 1.25 mm², 4-core cable, 3 m
Water Protection	-	IPX4	-	IPX4
Finish	Enclosure: Plywood black, paint Front grill: Punched steel plate, black, acrylic paint	Enclosure: Plywood, black, urethane coating Front grill: Punched stainless steel (SUS304), black, paint	Enclosure: Plywood black, paint Front grill: Punched steel plate, black, acrylic paint	Enclosure: Plywood, black, urethane coating Front grill: Punched stainless steel (SUS304), black, paint
Dimensions (W x H x D)	740 × 433 × 469 mm		740 × 433 × 467 mm	
Weight	49 kg	51 kg	47 kg	48 kg

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High Performance Speakers / **SR-A18B**

EASE data

Features

- Subwoofer adjusted with High Performance Speakers Type A
- Employs multi amplifier drive system
- 46 cm (18") cone speaker
- 80 Hz crossover frequency
- 720 W continuous program

Options

- SR-A12L / SR-A12LWP / SR-A12S / SR-A12SWP: High Performance Speakers
- SR-RF12 / SR-RF12WP: Rigging Frame

Applications

- Clubs
- Stages for live performances
- Houses of worship
- Auditoriums
- Youth centers
- Multi-purpose halls

Specifications

	SR-A18B
Enclosure	Bass-reflex type
Power Handling Capacity	Continuous program: 720 W
Rated Impedance	8 Ω
Sensitivity (1 W, 1 m)	95 dB
Frequency Response	40 – 400 Hz
Crossover Frequency	80 Hz
Speaker Component	46 cm cone-type
Input Connector	M5 screw terminal, distance between barriers: 12.2 mm and Neutrik NL4MP x 2 (usable cable connector: Neutrik NL4FC)
Finish	Enclosure: Plywood black, paint / Front grill: Punched steel plate, black, acrylic paint
Dimensions (W x H x D)	740 x 573 x 698 mm
Weight	66 kg

'Lounge music, jazz, classical – yet still
effortlessly hear every order loud and clear.'

Sometimes it is the simple and apparently unseen things that provide for a very
special atmosphere. At TOA, our background technology can create a variety of
different atmospheres in bars, restaurants or hotel lobbies. Easy to use, fantastic
sound and attractive design – so that both you and your guests can relax.

Form follows function!
Yours, Dr. Sound

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Array Microphone / **AM-1**

Talk to your audience, not to the microphone.

Placed flat and unobstrusively on the podium, the real-time steering array microphone tracks your voice and captures it clearly and uniformly. Equipped with a built-in sensor, the microphone detects sound sources and steers its beam angle automatically in real-time to focus on that source. This frees speakers to move back and forth in the vicinity of the podium, turn or tilt their heads to address different sections of the audience, or gesture naturally without concern for the location of the microphone.

The innovative voice-tracking technology completely eliminates the interference and inconvenience of gooseneck or handheld mikes. Intuitive parameter setting by iPad™ adds further convenience.

Connection example

iPad™ PC
Mute switch
Microphone unit
WiFi
Max. 200ft with STP
SW HUB
AC Adapter
Control unit
Audio Output CAT 5
Mixer
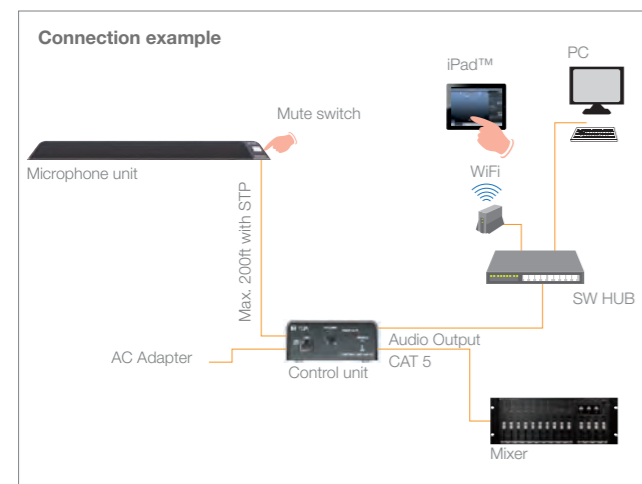
Features

- High movement flexibility
- Unobstrusive desktop design
- Trouble-free setting and monitoring

Applications

- Churches
- Conference rooms
- Board rooms
- Auditoriums

Array Microphone / **AM-1**

Features

- Built-in voice detection sensor captures voice from up to 3 m and to tracking range angles up to 180°
- Level compensation for reduced volume variations
- Narrow (50°) directivity assuring minimal acoustic feedback
- Innovative pad-like form permitting unobtrusive placement
- Removal of barrier between speaker and audience

- Freedom to adopt a comfortable speaking posture
- Ability to move and gesture naturally
- Permits quick, one-touch adjustment of control unit parameter settings from an iPad™ using a dedicated app or firmware
- Adjustment by PC is also possible
- Tracking distance/range, sensitivity/speed, Mute on/off

Options

- AD-246: AC Adapter

Specifications

	AM-1MBQAM / AM-1MWQAM Microphone unit
Power Source	24 VDC / 200 mA (supplied from control unit)
Frequency Response	150 Hz – 18 kHz
Directivity (Beam Width)	50°
Max. Cable Length	70 m (between microphone & control)
Applicable Cable	Twisted two-core, shielded cable
Mute Function	Mechanical mute switch
Dimensions (W x H x D)	482 x 20 x 65 mm
Finish	black (AM-1MBQAM) or white (AM-1MWQAM)

	AM-1CQAM Control unit
Power Source	24 VDC / 400 mA (including microphone power/ supplied by AC adapter)
S/N (Microphone)	Over 90 dB
Input	Microphone input (audio & communication), XLR-3-31 equivalent
Audio Output	Analog: +4 dBu, -10 dBV, -50 dBu (selectable), XLR-3-32; Digital: AES/EBU 24bit 110 Ω, XLR-3-32
Network Port	RJ45
Finish	black

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Dynamic Microphones / **DM-1100 / DM-1300 / DM-1200 / DM-1200D**

DM-1100

DM-1300

DM-1200

DM-1200D

Features

- Dynamic hand-held microphones
- Switching and handling noise suppression
- DM-1100 has 7.5 m cable with phone plug
- DM-1300 with (balanced) XLR-connector has 10 m cable with (unbalanced) phone plug
- DM-1200 has XLR-connector and a 10 m cable with phone plug
- DM-1200D comes with a remote control function to activate amplifiers power or chime unit and with a 5 m cable with 5-pin DIN plug
- Adapter for stand mounting is provided

Options

- ST-65A: Low Desk Stand
- ST-66A: High Desk Stand

Applications

- DM-1100: Paging
- DM-1300: Speech, vocal
- DM-1200: For daily use for presentation, performance or paging
- DM-1200D: For PA-System and paging (e.g. with pre-announcement gong)

Specifications

	DM-1100	DM-1300	DM-1200	DM-1200D
Type	Dynamic microphone			
Directivity	Unidirectional			
Rated Impedance	600 Ω, unbalanced	600 Ω, balanced		
Rated Sensitivity	-55 dB (1 kHz 0 dB = 1 V/Pa)	-54 dB (1 kHz 0 dB = 1 V/Pa)	-55 dB (1 kHz 0 dB = 1 V/Pa)	
Frequency Response	100 Hz – 12 kHz	70 Hz – 15 kHz	50 Hz – 12 kHz	
Talk Switch	Short-off type, slide on/off switch			
Finish	Body: Die cast aluminium, painted black / Head: ABS resin, black/zinc plated steel wire, painted black	Body: Die cast zinc, painted metallic gray Head: Aluminium, zinc plated steel wire, painted metallic gray		
Dimensions (ø x L)	55 x 178 mm	51 x 170 mm	39.5 x 163 mm	
Weight	155 g	245 g	265 g	

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Dynamic Microphones / **DM-1500**

Features

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

Options

- ST-65A: Low Desk Stand
- ST-66A: High Desk Stand)
- ST-321B, ST-322B: Microphone Stands

Applications

- Speech
- Vocal

Specifications

	DM-1500
Type	Dynamic microphone
Directivity	Cardioid
Rated Impedance	600 Ω, balanced
Rated Sensitivity	-56 dB (1 kHz 0 dB = 1 V/Pa)
Frequency Response	70 Hz – 15 kHz
Talk Switch	Short-off type, slide on/off switch
Finish	Body: Die cast zinc, painted metallic gold / Head: Brass and zinc plated steel wire, painted metallic gold
Dimensions (ø x L)	40.5 x 173 mm
Weight	280 g

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Dynamic Microphones / **DM-524B / DM-524S**

DM-524B

DM-524S

DM-524B / DM-524S

- Flexible and durable goosenecks
- Suppresses handling noise
- DM-524S has a built-in On/Off switch
- 600 Ω, balanced
- 3-pin connector

Options

- ST-73A: Microphone Stand

Applications

- Lecture desk
- Paging

Specifications

	DM-524B	DM-524S
Type	Dynamic microphone	
Directivity	Cardioid	
Rated Impedance	600 Ω, balanced	
Rated Sensitivity	-56 dB (1 kHz 0 dB = 1 V/Pa)	
Frequency Response	100 Hz – 10 kHz	
Switch	-	ON/OFF switch
Finish	Microphone Body: Gold, sparkling paint / Gooseneck, Shaft: Nickel-pear skin-plating	
Dimensions (ø x L)	40 x 532 mm	40 x 557 mm
Weight	465 g	475 g

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Condenser Microphones / **EM-410 / EM-800**

EM-410

EM-800

(With microphone stand: ST-800)

EM-410

- Lavalier Microphone for voice-oriented applications
- Provides the best performance when attached to a chest such as shirt front
- Minimises noise pickup from clothes rustling and cables
- Capsule rotates 360 degrees, for optimal pickup even when worn on a lapel
- Cable length: 5 m

EM-800

- Gooseneck Microphone for speech applications
- Excellent high-frequency response delivers clear output
- High sensitivity 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
- Optional microphone stand available (ST-800)

Applications

- Houses of worship
- Meeting rooms
- Lectures
- Presentations

Specifications

	EM-410	EM-800
Type	Electret condenser microphone	
Directivity	Hyper-cardioid	Cardioid
Rated Impedance	120 Ω, balanced	
Phantom Power	9 – 52 VDC	
Rated Sensitivity	-45 dB (1 kHz 0 dB = 1 V/Pa)	-35 dB (1 kHz 0 dB = 1 V/Pa)
Frequency Response	100 Hz – 15 kHz	60 Hz – 20 kHz
Output Connector	Balanced-phone plug	XLR-3-12 equivalent
Finish	Copper alloy, black, semi-gloss, paint	
Dimensions (ø x L)	8.9 x 28.6 mm (cord excluded)	12 x 420 mm (cord excluded)
Weight	100 g	135 g

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Boundary Microphones / **EM-600 / EM-700**

EM-600

EM-700

EM-600

- Flush-Mount Boundary Microphone
- Wide frequency range provides well-balanced sound with clarity and a satisfying tonal response
- Unobtrusive design allows easy flush-mounting in walls, ceilings, and desktops
- Optimized to deliver best performance when used on a desk or attached to a ceiling
- A 50 Hz low-cut filter reduces intrusive noise, such as air conditioner rumble or door opening/closing
- Two rubber isolation rings provided as an accessory serving to reduce vibration

EM-700

- 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 provides well-balanced sound with clarity and a satisfying tonal response

Applications

EM-600
- Conference room recording
- Security monitoring

EM-700
- Speech
- Recording

Specifications

	EM-600	EM-700
Type	Flush-Mount Boundary Microphone	Boundary Microphone
Directivity	Omnidirectional	Cardioid
Rated Impedance	120 Ω, balanced	
Phantom Power	9 – 52 V DC	
Rated Sensitivity	-36 dB (1k Hz 0 dB = 1 V/Pa)	
Frequency Response	30 Hz – 20 kHz	35 Hz – 20 kHz
Connector	XLR-3-12 or equivalent	XLR-3-12 or equivalent, Cable length: 7.5 m
Finish	Body: Steel, white, semi-gloss, paint / Head: Zinc-plated steel wire, white, semi-gloss, paint	Body: Die-cast aluminium, black, mat finish, paint / Punched net: Surface-treated steel plate, black, mat finish, paint
Dimensions	28 x 68 mm (ø x L)	83 x 23 x 83 mm (W x H x D)
Weight	85 g	290 g

Paging Microphones / **PM-660 / RM-9012C-EB**

PM-660

RM-9012C-EB

PM-660

- Desktop microphone
- Short-off talk switch with locking lever or open-off type switch contact
- Low handling noise
- PM-660: 2,5 m cable with phone plug
  PM-660D: 5-pin DIN-plug
  PM-660U: 2 m without plug
- Talk-switch with contact for remote control (PM-660D)
- Options: RU-2001, RU-2002: Power Remote Units

RM-9012C-EB

- Unidirectional electret condenser microphone with balanced audio output
- An all-call button for selecting all zones
- Clear button for clearing all zone selections
- Announcement to the selected zones out of a maximum of 12 zones
- 1-tone chime function with swich setting
- Microphones volume control
- LED indicator for each selector
- RJ45 connector
- Options: AD-246: AC Adapter, M-9000M2: Digital Mixer

Applications

- Reception
- Cashier station
- Counter

Specifications

	PM-660	PM-660D	PM-660U	RM-9012C-EB
Type	Dynamic paging microphone			Desk top microphone for paging
Directivity	Cardioid			Unidirectional
Power Source	-			24 V DC (Operating range: 19 V – 29 V DC) supplied from AC adaptor
Rated Impedance	600 Ω, unbalanced	600 Ω, balanced		600 Ω, transformer balanced
Rated Sensitivity	-58 dB (1k Hz 0 dB = 1 V/Pa)			-60 dB (1 kHz 0 dB = 1 V/Pa)
Frequency Response	100 Hz – 10 kHz			100 Hz – 20 kHz
Chime	-			1-tone chime, chime function with switch setting
Controls	Push-to-talk switch, Locking lever, Short-off type	Leaf spring contact (interlocked with talk switch, 30 V DC, under 500 mA		12 zone selection keys, All call key, Clear key, Talk key
Finish	Head: Zinc plated steel wire, gray, paint / Body: ABS resin, gray			ABS resin, black
Dimensions (W x H x D)	100 x 215 x 150 mm			190 x 76.5 x 215 mm
Weight	440 g			750 g

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Paging Microphones / **PM-120 / PM-222**

PM-120

PM-222

PM-120

- Wide frequency response effective in high ambient noise areas
- Push-to-talk switch with lock
- 250 Ω impedance, unbalanced
- 2.5 m coiled cable with phone plug
- Unidirectional polar pattern

PM-222

- Push-to-talk switch with lock
- Heavy duty metallic body
- PM-222: with phone plug and 2 m cable
- PM-222D: with remote switch and DIN-plug
- PM-222U: has no plug

Applications

- Paging in areas with high ambient noise

Specifications

	PM-120	**PM-222**
Type	Heavy duty paging microphone (dynamic)	Rugged Microphone (dynamic)
Directivity	Unidirectional	
Rated Impedance	250 Ω, unbalanced	600 Ω, unbalanced
Rated Sensitivity	-56 dB (1 kHz 0 dB = 1 V/Pa)	-47 dB (1 kHz 0 dB = 1 V/Pa)
Frequency Response	50 Hz – 12 kHz	100 Hz – 10 kHz
Finish	Embossed	ABS resin, gray
Dimensions	46 x 157 mm (ø x L)	44 x 160 x 38 mm (W x H x D)
Weight	230 g	200 g

Paging Microphones / **PM-306D / EC-100M**

PM-306D

EC-100M

PM-306D

- Heavy duty microphone
- Metallic body suppresses background and handling noise for high intelligibility
- Push-to-talk-switch
- Coiled cable with 5-pin DIN plug (unbalanced)
- 500 Ω impedance

EC-100M

- Unidirectional dynamic microphone
- Built-in electronic chime unit generates 2 series of 4 notes – from low to high and vice versa
- 2 push-buttons for easy operation

Applications

PM-306D
- Paging in areas with high ambient noise

EC-100M
- Reception
- Cashier station
- Counter

Specifications

	PM-306D	**EC-100M**
Type	Heavy-duty Microphone (dynamic)	Desk top microphone for paging (dynamic)
Directivity	Omnidirectional	Unidirectional
Rated Impedance	500 Ω, unbalanced	600 Ω, unbalanced
Rated Sensitivity	-50 dB (1 kHz 0 dB = 1 V/Pa)	-53 dB (1 kHz 0 dB = 1 V/Pa)
Chime	-	4-note chime
Frequency Response	80 Hz – 16 kHz	200 Hz – 10 kHz
Controls	Push-to-talk switch	ON/OFF switch
Finish	Gray	Case: Zinc die casting, metallic gold
Dimensions	40 x 134 mm (ø x L)	112 x 293 x 150 mm (W x H x D)
Weight	350 g	770 g

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Power Remote Units / **RU-2001 / RU-2002**

RU-2001

RU-2002

Features

- For remote power control of main amplifier and for initiating all-call
- Microphone volume control, talk indicator
- Power supply via optional AC adapter
- Mounting brackets for wall-mounting are included
- RU-2002 activates 4, 2 or single tone chime plus gong when talk switch is pressed

Options

- PM-660D: Remote Microphone
- AD-246: AC Adapter

Specifications

	RU-2001	RU-2002
Power Supply	12 – 24 V DC, external or 12 V AC Adapter	
Power Consumption	60 mA	
Output	0 dBV, 600 Ω, balanced	
Microphone Input	-62 dB (1 kHz 0 dB = 1 V/Pa)	
Chime	-	4, 2 or single tone chime, gong
Finish	black	
Dimensions (W x H x D)	124 x 42.5 x 159 mm	
Weight	700 g	

Microphones / **Accessories**

		Article number
	Desk Stand, low • Height 120 – 175 mm • 5/16" stand adapter and 5/8" inner pipe thread • With microphone holder	ST-65A
	Desk Stand, high • Height 220 – 347 mm • 5/16" stand adapter and 5/8" inner pipe thread • With microphone holder	ST-66A
	Floor Stand with boom • Height 1,010 – 1,720 mm • Boom 53 – 660 mm • U5/16 adapter and NS5/8 thread	ST-321B
	Floor Stand • Height 971 – 1,627 mm • U5/16 adapter and NS5/8 thread	ST-322B
	Desk Stand for DM-524B / DM-524S • Height 58.5 mm	ST-73A
	Gooseneck for ST-73A • Height 367 mm, connector XLR-3-11C • Non-RoHS product	YM-121
	Gooseneck, short • Height 150 mm, 5/16" thread • Non-RoHS product	ST-506
	Gooseneck, long • Height 300 mm, 5/16" thread • Non-RoHS product	ST-507
	AC Adapter • Compact switching AC adapter • Power Source: 220 – 240 V, 50/60 Hz • Case: Heat-resistant resin, black • Cord length: 1.8 m	AD-246

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Digital Mixer Amplifiers / **A-5000 Series**

Control your music just the way you want it!

Background music plays an important part of your business and therefore quality and reliability must also match performance, design and style. The A-5000 Series offers the ability to control your music just the way you want it, with built in digital signal processors (DSP) that boast high efficiency and durability. Digital amplification for long-term use. Precise EQ settings via PC for optimal performance and security. Available in 60 and 120 Watt versions making it an ideal choice for small to medium restaurants and retail establishments.

LAN

Features

- 1U-half size compact and simple hardware for easy setting
- Hi-/Low-Z speaker connection
- Intuitive GUI software for sound optimization

Applications

- Restaurants
- Bars
- Coffee shops
- Lobbies
- Retail stores

Digital Mixer Amplifiers / A-5000 Series / **A-5006 / A-5012**

Features

- 60 W or 120 W
- 2 x mic/line inputs with mute function
- 5-band Parametric Equalizer for each input and output (DSP)
- Remote Master Volume Control
- Mute (Mic 1 priority: Manual mute)
- Compressor for both input 1 and 2

Options

For installation in cabinet racks:
- MB-15B-BK (installation of one unit)
- MB-15B-J (installation of two units)

Applications

- Restaurants
- Bars
- Lobbies
- Retail stores
- Meeting rooms

Specifications

	A-5006	A-5012
Power Source	100 – 240 V AC, 50 / 60 Hz	
Rated Output	60 W	120 W
Power Consumption	106 W (rated output), 20 W (based on cULus standards) Max. 2 A	207 W (rated output), 39 W (based on cULus standards) Max. 3 A
Outputs	Speaker: 4 Ω, 70 V (83 Ω), 100 V (170 Ω), removable terminal block (5 pins)	Speaker: 4 Ωs, 70 V (42 Ω) , 100 V (83 Ω), removable terminal block (5 pins)
Inputs	INPUT 1, 2: MIC -60 dBV, LINE -20 dBV, MIC/LINE selectable 2.2k Ωs, electronically-balanced, removable terminal block (5 pins) INPUT 3, 4: LINE -20 dBV, 10k Ωs, unbalanced, RCA pin jack	
Frequency Response	50 Hz – 20 kHz, 1/8 output	
Distortion	1 % or less (1 kHz, rated output)	
S/N Ratio	MIC 1, 2: 50 dB or more, LINE 1 – 4: 70 dB or more (A-weighted)	
DSP Function	Parametric equalizer: 5 points settable on each input and output, 20 Hz – 20k Hz +/-15 dB, Q: 0.267 – 69.249 Compressor: ON/OFF settable on Inputs 1 and 2 (OFF by default) Threshold, Ratio, Attack time, Release time, and Gain are settable independently on each input	
Controls	Mute control, Remote master volume control, Power ON/OFF switch, Ground lift	
Finish	Panel: Polystyrene resin, black / Case: Surface-treated steel plate, black, paint	
Dimensions (W x H x D)	210 x 52.5 x 375 mm	
Weight	3.6 kg	3.9 kg

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Digital Mixer Amplifiers / **A-2000D Series**

High cost-performance digital mixer power amplifiers for broadcasting paging or BGM.

A-2000D Series is a range of high performance mixer power amplifiers suited for broadcasting paging or background music in houses of worship, schools, offices, retailers, factories and large rooms.

Equipped with balanced microphone inputs for better isolation from external noise, compared to unbalanced inputs, the A-2000D Series comes with a wide range of power outputs from 30 W to 240 W and is suitable for both AC and DC operation.

It is finished with a scratch and fingerprint-resistant surface for easy handling as well as quick volume control with master volume knob.

Features

- Balanced microphone inputs
- Wide range of power outputs from 30W to 240W
- Suitable for both AC and DC operation
- Finished with a scratch and fingerprint-resistant surface for easy handling
- Quick volume control with master volume knob

Applications

- Schools
- Offices
- Shops
- Factories
- Houses of worship

Digital Mixer Amplifiers / A-2000D Series / **A-2030D / A-2060D / A-2120D / A-2240D**

Features

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

Applications

- Schools
- Offices
- Shops
- Factories
- Houses of worship

Specifications

	A-2030D	A-2060D	A-2120D	A-2240D
Power Source		230 V AC, 50 / 60 Hz		
Rated Output	30 W	60 W	120 W	240 W
Power Consumption	12 W	16 W	30 W	48 W
Outputs		Speaker: balanced (floating) / Rec out: 0 dBV, 600 Ω, unbalanced, RCA Pin Jack		
Inputs		MIC 1 – 3: -60 dBV, 600 Ω, balanced, Phone Jack AUX 1, 2: -20 dBV, 10 kΩ, unbalanced, RCA Pin Jack		
Frequency Response		50 Hz – 20 kHz (±3 dB)		
Distortion		< 1 % (1 kHz)		
S/N Ratio		> 60 dB		
Tone Controls		Bass ±10 dB (100 Hz) / Treble ±10 dB (10000 Hz)		
Finish		Panel: ABS resin black / Case: steel plate, black		
Dimensions (W x H x D)		420 x 100.6 x 280.3 mm		
Weight	4 kg	4.6 kg		4 kg

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Mixer Amplifiers / **A-2000 Series**

High performance for broadcasting paging or background music at affordable costs.

Multi-purpose, multi-function mixer/power amplifiers specifically designed for maximum versatility and cost-effective high-performance are ideal units for any PA requirement in locations such as schools and offices and other intermediate size environments. A choice of different power outputs are offered as well as functions such as paging and dual zone coverage.

Features

- High cost performance
- Flexibility
- Easy to handle

Applications

- Schools
- Offices
- Shops
- Factories
- Houses of worship

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Mixer Amplifiers / A-2000 Series / **A-2030 / A-2060 / A-2120 / A-2240**

Features

- 4 versions available: 30 W, 60 W, 120 W or 240 W
- User-friendly front panel allows easy operation
- Excellent frequency response
- 3 electronically balanced microphone inputs, 2 AUX inputs and recording output
- Phantom power is provided to MIC 1, for supplying power to a condenser microphone
- Wide tone-control adjustment range of ±10dB for both bass and treble
- 100 V / 70 V line or 4 Ω speaker outputs
- Recording output
- 3 MIC inputs, 2 AUX inputs for tuner, cassette player or other BGM sources
- 2-unit size

Options

- P-1812: Power Amplifier 120 W
- MB-25B-BK: Mounting Bracket

Applications

- Schools
- Offices
- Shops
- Factories
- Houses of worship

Specifications

	A-2030	**A-2060**	**A-2120**	**A-2240**
Power Source	230 V AC, 50 / 60 Hz or 24 V DC			
Rated Output	30 W	60 W	120 W	240 W
Power Consumption	34 W (AC) EN60065 or 2 A (DC)	72 W (AC) or 4 A (DC)	124 W (AC) or 8 A (DC)	238 W (AC) or 15 A (DC)
Outputs	Speaker out: 100 V, 70 V, 4 Ω / Recording			
Inputs	MIC 1: -60dB, 600Ω, electronically balanced, 5-P DIN type MIC 2, 3: -60dB, 600Ω, electronically balanced, phone jack AUX 1, 2: -20dB, 10kΩ, unbalanced, RCA pin jack Mute: Contact Pin 4 – 5, closure input (for MIC 1)			
Frequency Response	50 Hz – 20 kHz (±3 dB)			
Distortion	< 1 % (1 kHz)			
S/N Ratio	> 60 dB			
Tone Controls	Bass ±10 dB (100 Hz) / Treble ±10 dB (10000 Hz)			
Finish	Panel: ABS resin black / Case: steel plate, black			
Dimensions (W x H x D)	420 x 100.9 x 280.3 mm		420 x 100.9 x 360.3 mm	
Weight	5 kg	7 kg	10.8 kg	13.2 kg

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Mixer Amplifiers / A-1700 Series / **A-1706 / A-1712 / A-1724**

Features

- 3 versions available: 60 W, 120 W or 240 W
- User-friendly front panel allows easy operation
- Individual zone speaker selection buttons enable broadcasting to 2 separate zones
- One of 3 different program sources can be broadcasted
- High-quality circuitry for wide frequency response (e.g. for CD music sources and hook-up of FGM / BGM speakers)
- Recording output
- 6 MIC inputs
- AUX-1, 2, 3 inputs for tuner, cd player or other BGM sources

Options

- MB-25B: Mounting Bracket

Applications

- Houses of worship & religious facilities
- Schools
- Auditoriums
- Offices
- Small to medium sized locations with the need to connect multiple sound sources like microphones

Specifications

	A-1706	A-1712	A-1724
Power Source	230 V AC, 50 / 60 Hz		
Rated Output	60 W	120 W	240 W
Power Consumption	150 W	258 W	532 W
Speaker Outputs	100 V (167 Ω), 4 – 16 Ω	100 V (83 Ω), 4 – 16 Ω	100 V (42 Ω), 4 – 16 Ω
Recording Output	0 dBV, 600 Ω, unbalanced, RCA pin jack		
Inputs	MIC 1–6: -60 dBV, 600 Ω, balanced, combined XLR phone jack AUX 1–2: -20 dBV, 600 Ω, balanced, combined XLR phone jack AUX 3–4: -20 dBV, 10 kΩ, unbalanced RCA pin jack AUX 5: -20 dBV, 10 kΩ, unbal. combined XLR phone jack PWR Amp In: 0 dBV, 600 Ω, unbalanced RCA pin jack		
Frequency Response	50 Hz – 20 kHz (±3 dB)		
Distortion	< 2 % (1 kHz)		
S/N Ratio	MIC: > 60 dB / AUX: > 76 dB / Master: > 100 dB (Volume: min.)		
Tone Controls	Bass ±10 dB (100 Hz) / Treble ±10 dB (10000 Hz)		
Finish	Panel: ABS resin black / Case: steel plate, black		
Dimensions (W x H x D)	420 x 107.7 x 367 mm		
Weight	9.3 kg	12.6 kg	13.5 kg

Mixer Amplifiers / A-1800 Series / **A-1803 / A-1806 / A-1812**

Features

- 3 versions available: 30 W, 60 W or 120 W
- User-friendly front panel for easy operation
- Individual zone speaker selection buttons enable broadcasting to 2 separate zones
- 3 MIC inputs with MIC 1 priority override
- One of 3 different program sources can be broadcasted
- High-quality circuitry enables wide frequency response (e.g. for CD music sources and for FGM/BGM speakers)
- Recording output
- Built-in MIC 1 chime for use with optional remote microphone
- Remote-in terminal for emergency control with automatic setting of default output level for the emergency input

Options

- P-1812: Power Amplifier 120 W
- MB-25B: Mounting Bracket
- PM-660D: Remote Microphone

Applications

- Small offices
- Schools
- Shops
- Restaurants

Specifications

	A-1803	A-1806	A-1812
Power Source	230 V AC, 50/60 Hz		
Rated Output	30 W	60 W	120 W
Power Consumption	80 W	158 W	260 W
Speaker Outputs	100 V (330 Ω), 4 – 16 Ω	100 V (167 Ω), 4 – 16 Ω	100 V (83 Ω), 4 – 16 Ω
Recording Output	0 dBV, 600 Ω, unbalanced, RCA pin jack		
Inputs	MIC 1: -60 dBV, 600 Ω, balanced, combined XLR phone jack or 5p DIN socket MIC 2 & MIC 3: -60 dBV, 600 Ω, balanced, combined XLR phone jack AUX 1–2: –20 dBV, 10 kΩ, unbal. RCA AUX 3: -20 dBV, 10 kΩ, unbal. combined XLR phone jack		
Chime	1-tone, 2-tone, ascending 4-tone or none		
Frequency Response	50 Hz – 20 kHz (±3 dB)		
Distortion	< 2 % (1 kHz)		
S/N Ratio	MIC: > 60 dB; AUX : > 76 dB; Tel: > 90 dB		
Tone Controls	Bass ±10 dB (100 Hz) / Treble ±10 dB (10000 Hz)		
Finish	Panel: ABS resin black / Case: steel plate, black		
Dimensions (W x H x D)	420 x 107.7 x 367 mm		
Weight	8.1 kg	9.4 kg	12.6 kg

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05 DISTRIBUTION /

Power Amplifiers / **P-1812**

Features

- Allows more speakers in 1 system
- Connection to an A-1800 Series amplifier's line out
- Operation on AC or on DC 24 V to match installation requirements
- Rear panel remote-in terminal for emergency control
- Remote-control via main volume setting control: Output level for the emergency input
- Switchable input levels: -10 dBV or 0 dBV

Options

- A-1803, A-1806, A-1812: Mixer Amplifier
- MB-25B-BK: Mounting Bracket

Applications

- Schools
- Offices
- Shops
- Factories
- Houses of worship

Specifications

	P-1812
Power Source	230 V AC, 50 / 60 Hz or 24 VDC
Rated Output	120 W
Power Consumption	258 W
Inputs	Line: 0 / -10 dBV, 10 kΩ, transformer balanced, RCA pin jack
Outputs	Line: 0 dBV, 600 Ω, unbalanced, RCA pin jack Speaker out: High impedance: 83 Ω (100 V), M4 screw terminal Low impedance: 4 – 16 Ω, M4 screw terminal
Frequency Response	50 Hz – 20 kHz (±3 dB)
Distortion	< 2 % (1 kHz)
S/N Ratio	> 97 dB
Tone Controls	Bass ±10 dB (100 Hz) / Treble ±10 dB (10000 Hz)
Finish	Panel: ABS resin black / Case: steel plate, black
Dimensions (W x H x D)	420 x 107.7 x 367 mm
Weight	12.2 kg

Power Amplifiers / **P-2240**

Features

- 240 W output power
- 100 V line input allows connection to speaker output of A-2000 series amplifiers
- Remote power control allows operation independently from A-2000 series amplifiers
- Emergency bypass of master volume
- 2 units high

Options

- A-2030 / A-2060 / A-2120 / A-2240: Mixer Amplifiers
- MB-25B-BK: Mounting Bracket

Applications

- Small offices
- Schools
- Shops
- Restaurants

Specifications

	P-2240
Power Source	230 V AC, 50 / 60 Hz or 24 VDC
Rated Output	240 W
Power Consumption	520 W (AC) or 15 A (DC)
Inputs	Line-in 0 dBV, 10 kΩ, balanced, screw terminal 100 V line in: 40 dBV, 330 kΩ, unbalanced, screw terminal Power remote control: Make contact
Outputs	Loop out: 0 dBV, 10 kΩ, balanced, screw terminal Speaker out: Balanced (floating) High impedance: 42 Ω (100 V), 21 Ω (70 V) Low impedance: 4 Ω (31 V)
Frequency Response	50 Hz – 20 kHz (±3 dB)
Distortion	< 1 % (1 kHz)
S/N Ratio	> 60 dB
Tone Controls	Bass ±10 dB (100 Hz) / Treble ±10 dB (10000 Hz)
Finish	Panel: ABS resin black / Case: steel plate, black
Dimensions (W x H x D)	420 x 100.9 x 351.3 mm
Weight	15.5 kg

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Power Amplifiers / **VP-1061 / VP-1121 / VP-1241 / VP-1361**

VP-1061 / VP-1121

VP-1241 / VP-1361

Features

- 1-channel amplifier
- 4 different wattages: 60 W, 120 W, 240 W or 360 W
- For PA and emergency announcements
- 2 parallel program inputs and 2 parallel priority inputs
- Relay contact for emergency anouncements
- Easy connection thanks to removable terminal blocks
- Output current limiter
- Fault detection of the amplifier and the speaker line with an optional module

Options

- MB-25B-BK: Rack Mounting Kit for one unit (VP-1061 or VP-1121)
- MB-25B-J: Rack Mounting Kit for two units (VP-1061, VP-1121)

Applications

- Small offices
- Schools
- Shops
- Restaurants

Specifications

	VP-1061	VP-1121	VP-1241	VP-1361
Power Source	230 V AC, 50 / 60 Hz / DC: 24 V			
Rated Output	60 W	120 W	240 W	360 W
Power Consumption	170 W / 100 W (EN60065) / DC 4.5 A	320 W / 160 W (EN60065) DC 8.2 A	537 W / 240 W (EN60065) DC 14.6 A	768 W / 330 W (EN60065) DC 20.9 A
Speaker Outputs	100 V (167 Ω)	100 V (83 Ω)	100 V (42 Ω)	100 V (28 Ω)
Inputs	2 program inputs (parallel): 0 dB, 20 kΩ, balanced 2 priority inputs (parallel): 0 dB, 20 kΩ, balanced			
Frequency Response	80 Hz – 16 kHz (±3 dB)			
Distortion	< 1 % (1 kHz)			
S/N Ratio	> 80 dB			
Finish	Panel: Aluminium, black, alumite			
Dimensions (W x H x D)	210 x 88.4 x 338.7 mm		483.6 x 132.6 x 337.8 mm	
Weight	6.9 kg	9.3 kg	13.4 kg	16.6 kg

System Amplifiers / **VM-2120 / VM-2240**

Features

- Programmable system management amplifier
- 120 W or 240 W
- 5 switchable high impedance speaker zones with adjustable attenuators
- 9 units can be combined to increase the output power and number of zones
- 4 input channels come with volume and bass/ treble control on the front panel
- Both BGM inputs with level pre-adjustment
- The routing to the zones of the 3 microphone/ line level inputs and the telephone paging input can be pre-set
- Emergency power input, remote power control, 7 built-in chimes etc.

Options

- EV-200M: Voice Announcement Board
- SV-200MA: Surveillance Board
- MB-36: Mounting Brackets
- IT-450: Input Transformer, 600 Ω
- M-9000M2: Digital Mixer

Applications

- Restaurants & bars
- Hotels
- Conference & board rooms
- Auditoriums
- Offices
- Museums
- Fitness clubs
- Theme parks
- Houses of worship

Specifications

	VM-2120	VM-2240
Power Source	AC: mains, 50 / 60 Hz / DC: 24 V	
Rated Output	120 W	240 W
Power Consumption	AC: 107 W (EN60065), DC: 2.1 A	AC: 255 W (EN60065), DC: 5 A
Speaker Outputs	Plug-in screw connector, 5-zone selector with attenuator (all zones simultaneously selectable)	
Inputs	1-3 for MIC, LINE XLR connector /phone jack, Input 1 is additionally DIN connector, telephone paging: Push-in terminal, BGM 1-2 and power amp: RCApin jack, external speaker line: 100V	
Frequency Response	50 Hz – 16 kHz (±3 dB)	
Distortion	< 1 % (1 kHz)	
S/N Ratio	> 60 dB	
Finish	Panel: ABS resin, dark grey, paint / Case: steel plate, dark grey, paint	
Dimensions (W x H x D)	419 x 143.3 x 355.7 mm	
Weight	12.5 kg	14.5 kg

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Car Amplifiers / CA-115 / CA-130 / CA-160

Features

- Mobile amplifier for easy installation in vehicles
- DC operation from 12 V battery
- Rated output 15 W, 30 W or 60 W
- 2 MIC inputs
- AUX input for CD player, radio, etc.
- Unidirectional dynamic microphone with talk switch
- Front pause function
- DIN size, easy in-dash installation
- Rugged construction

Applications

- Any kind of vehicle e.g. bus, ship, vehicle

Specifications

	CA-115	CA-130	CA-160
Power Source	14 VDC (10 – 16 VDC)		
Rated Output	15 W	30 W	60 W
Current Consumption	< 3 A	< 5 A	< 9 A
Inputs	MIC 1,2: 600 Ω, 4 mV, phone jack / AUX: 10 kΩ, 500 mV, phone jack terminal		
Output Impedance	4 Ω / 8 Ω		
Frequency Response	100 Hz – 10 kHz (±3 dB)		
Distortion	< 5 % (1 kHz)		
Microphone (Accessory)	Unidirectional with talk switch		
Impedance	600 Ω		
Sensitivity	-53 dB (1 kHz, 0 dB = 1 V/Pa)		
Finish	Front panel: ABS resin, black / Case: zinc plated steel sheet		
Dimensions (W x H x D)	178 x 50 x 132 mm	178 x 50 x 144 mm	178 x 50 x 170 mm
Weight	0.9 kg	1.1 kg	1.2 kg

Network Audio Adapter / NX-100

Also available as EN certified version (page 35)

Features

- Audio network adapter for transmitting audio and control signals via LAN
- Unicast: up to 4 locations, multicast: up to 64 locations
- Low cost operation
- Operation on both AC and DC

Options

For installation in cabinet racks:
- MB-15B-BK (installation of one unit)
- MB-15B-J (installation of two units)

Applications

- Schools
- Offices
- Shops
- Factories
- Houses of worship

Specifications

	NX-100
Power Source	24 VDC
Power Consumption	4.89 W (DC operation)
Audio Input	1 channel (isolated transformer), –58 dBV to 0 dBV, balanced (MIC/LINE changeable, volume adjustable with volume control), 2 kΩ, removable terminal block
Audio Output	1 channel (isolated transformer), balanced, 600 Ω, removable terminal block 3-pins
Control Inputs	8 (12 VDC, 10 mA)
Control Outputs	8 (open collector, 30 VDC, 50 mA)
Network	10BASE-T/100BASE-TX, Auto-negotiation
Finish	Steel plate, painted black
Dimensions (W x H x D)	210 x 44 x 188 mm (1/2 19", 1U)
Weight	1.2 kg

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Digital Message Repeaters / **EV-700**

Features

- Ideal for pre-recorded commercials and emergency messages
- Remote change of programs, recording, playback, erasure and stop
- Priority override for emergency messages
- Various pre-recorded audio files including pre-announcement, gings, chimes, melodies
- Free message configuration with up to 256 programs from 32,768 phrases
- Pre-announcement gong and chime possible
- Recording time up to 4 hours in high quality
- Holds up to 2 memory cards (1 included)
- 16 control inputs / 8 outputs

Options

- AD-246: AC Adapter
- MB-15B: Rack Mounting Bracket

Applications

- Retail stores
- Shopping malls
- Schools
- Factories
- Railway lines

Specifications

	EV-700
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, WAV file (monaural)
Control Input	Activations 1 – 16, playback, pause, recording, erasure/clear, emergency playback, emergency recording, emergency pause No-voltage make contact input, pulse make length: 50 ms or more, open voltage: 30 V DC, short-circuit current: 10 mA, Removable terminal block (16 pins)
Control Output	Shorting outputs 1 – 8 (busy), Error: contact capacity: 30 V DC, 0.5 A, Removable terminal block (8 pins)
Audio Input	MIC: -55 dBV (microphone input volume control in maximum position), 600 Ω, unbalanced, ø6.3 phone jack (2 pins) LINE (rear): -20 dBV (line input volume control in maximum position), 10 kΩ, unbalanced, Removable terminal block (12 pins) LINE (front): -29 dBV (line input volume control in maximum position), 10 kΩ, unbalanced, RCA pin jack
Audio Output	LINE 1, 2: 0 dBV, 600 Ω, unbalanced, Removable terminal block (12 pins) Headphones: 0 dBV, 100 Ω, monaural, ø3.5 mini jack (3 pins)
Network Protocol	TCP/JP, UDP, HTTP, FTP; RJ45 connector
Frequency Response	20 Hz – 20 kHz ±3 dB (1 kHz) / 50 Hz – 14 kHz ±3 dB (IT-450 mounted, 1 kHz)
Distortion	< 0.3 % (1 kHz)
Max. Recording Time	About 3 hours (at 44.1 kHz sampling rate) or about 4 hours (at 32 kHz sampling rate)
Finish	Case: ABS resin, black
Dimensions (W x H x D)	420 x 44 x 222 mm
Weight	2.4 kg

Digital Message Repeaters / **EV-20R**

Features

- For repeated high-quality broadcasts and announcements
- Easy to install and to use
- Feed-in BGM e.g. from external CD player possible
- Up to 4 separate messages can be stored and played back
- Built-in USB Interface allows the upload of audio files and announcements from a PC
- Announcements can be made by use of an external microphone
- Control inputs and outputs
- Speaker output
- Monitor output

Options

- AD-246: AC Adapter
- MB-WT3: Rack Mount Bracket Kit
- MB-WT4: Rack Mount Bracket Kit (2x EV-20R)
- IT-450: Input Transformer

Applications

- Supermarkets
- Shopping malls
- Production sites
- Train stops

Specifications

	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)
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 dBV, 2.2 kΩ / Line: -20 dBV, 10 kΩ, (Mic/Line changeable), unbalanced, phone jack Line input: 0 dBV, 10 kΩ, unbalanced, removable terminal block (22 pins)
Outputs	Line output: 0 dBV, 600 Ω, unbalanced, removable terminal block (22 pins) / Headphone output: 0 dBV, 100 Ω, unbalanced, phone jack / Speaker output: 3 W, 8 Ω, removable terminal block (22 pins)
Frequency Response	20 Hz – 20 kHz ±3 dB (1 kHz), 50 Hz – 14 kHz ±3 dB (IT-450 mounted, 1 kHz)
Distortion	< 1 % (1 kHz)
Max. Recording Time	6 Min
Message Delay Time	0, 2 or 4 s
Playback Interval Time	Endless, 0 s, 5 s, 10 s, 30 s, 1 min, 5 min, 10 min, 30 min or 1 h (selectable)
Finish	Case: ABS resin black
Dimensions (W x H x D)	210 x 44.2 x 181 mm
Weight	730 g

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Junction Panel & Monitor Panel / **JP-028B / MP-032B**

JP-028B

MP-032B

JP-028B

- Junction Panel
- For connection and control of AC power lines (10 pairs of screw terminals)
- Switched outlets (controlled by front power switch relay or rear remote terminals), 24 V DC regulated, max 0.2 A for preamplifier and relay control
- AC power output is maximum 20 A (switched) or 10 A (unswitched)

Options

- AD-246: AC Adapter
- MB-15B: Rack mounting bracket

MP-032B

- Passive monitor panel for speaker line level
- Monitors up to 10 separate channels or 10 amplifiers
- Large easy-to-read watt meter for adjusting output level
- Additional audio monitoring with built-in 5" full range speaker

Options

- YA-8: Connection Cable (8P DIN plug, 1 m length)

Specifications

	JP-028B	**MP-032B**
Power Requirements	230 V AC, 50 / 60 Hz, 16 W; AC Out: 20 A x 13 switched, 10 A x 5 unswitched DC Out: 24 V max. 0.2 A	230 V AC, 50 / 60 Hz
Input Lines	-	25 V (625 Ω), 50 V (2.5 kΩ}, 70 V (5 kΩ), 100 V (10 kΩ), switchable
No. of Terminals		10 x 2
Switch Capacity	20 A (380 V)	Channel selector switch, Volume control, Watt meter, Line voltage selector switch
Finish		Black
Dimensions (W x H x D)	483 x 89 x 350 mm	483 x 133 x 62 mm
Weight	5.7 kg	2.2 kg

Impedance Meter / **ZM-104A**

ZM-104A

- For easy and exact measurement of speaker impedances including long cable length
- Battery driven for mobile use (4 Mignon (AA) batteries)
- One set of batteries for 30 - 60 hours operation time (depending on the measurement range)
- Graphic conversion table impedance-power
- Oscillator generates 1 kHz frequency
- Measurement range of 5 to 100 kΩ
- Comes with a case and one set of test leads

Specifications

	ZM-104A
Scale	Ω
Measurement Range	x1 : 5 – 1,000 Ω x10 : 50 – 10,000 Ω x100 : 500 – 100,000 Ω
Accuracy	±10 %
Oscillation Frequency	1000 Hz ±10 %
Power Requirement	4 x R6 batteries (6 V)
Dimensions (W x H x D)	110 x 58 x 180 mm; 120 x 220 x 63 mm (incl. case)
Weight	700 g (incl. case)

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05 DISTRIBUTION /

Racks & Accessories / **CR Series**

- Available in 6 Versions
- Delivery in individual parts
- 1.5 mm steel plate
- Cable inserts at top and bottom
- Colour: light grey, RAL 9035, structured paint

EN 54 16

Certificate No: 1134-CPR-110

		Article number	Dimensions W x H x D in mm	Weight in kg
	Rack 15 units, incl. side panels	CR-15	650 x 781 x 600	28.00
	Rack 22 units, incl. side panels	CR-22	650 x 1,092 x 600	35.00
	Rack 27 units, incl. side panels	CR-27	650 x 1314 x 600	40.00
	Rack 35 units, incl. side panels	CR-35	650 x 1670 x 600	51.00
	Rack 40 units, incl. side panels	CR-40	650 x 1892 x 600	62.00
	Rack 44 units, incl. side panels	CR-44	650 x 2070 x 600	66.00
	Rear door for CR-Series 15 units	RC-15	485 x 666 x 20	3.90
	Rear door for CR-Series 22 units	RC-22	485 x 977 x 20	5.60
	Rear door for CR-Series 27 units	RC-27	485 x 1199 x 20	6.80
	Rear door for CR-Series 35 units	RC-35	485 x 1555 x 20	8.60
	Rear door for CR-Series 40 units	RC-40	485 x 1777 x 20	10.00
	Rear door for CR-Series 44 units	RC-44	485 x 1955 x 20	11.00
	Plexiglass door for CR-Series 15 units	PGD-15	566 x 781 x 25	6.20
	Plexiglass door for CR-Series 22 units	PGD-22	566 x 1092 x 25	8.00
	Plexiglass door for CR-Series 27 units	PGD-27	566 x 1314 x 25	9.00
	Plexiglass door for CR-Series 35 units	PGD-35	566 x 1670 x 25	11.10
	Plexiglass door for CR-Series 40 units	PGD-40	566 x 1892 x 25	12.30
	Plexiglass door for CR-Series 44 units	PGD-44	566 x 2070 x 25	13.30
	Perforated grid door for CR-Series 15 units	FDV-15	566 x 781 x 25	3.90
	Perforated grid door for CR-Series 22 units	FDV-22	566 x 1092 x 25	5.60
	Perforated grid door for CR-Series 27 units	FDV-27	566 x 1314 x 25	6.80
	Perforated grid door for CR-Series 35 units	FDV-35	566 x 1670 x 25	8.60
	Perforated grid door for CR-Series 40 units	FDV-40	566 x 1892 x 25	10.00
	Perforated grid door for CR-Series 44 units	FDV-44	566 x 2070 x 25	11.00

Racks & Accessories / **CR Series**

		Article number
	Caster base for CR-Series	SB-4
	Rolling caster base, closed for CR-Series	CB-4
	3-fold bottom plate for CR-Series	BC-3
	Leveller feet, adjustable	LF-4
	Brush strip for CR-Serie	BCK-1
	Top cover with 2 fans	FAN-KIT
	Sliding rail for heavy units	SA-1
	Lock for racks	FDL-1
	Acessory Set: captive nut, washers (100 pcs each)	CR-SS

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Racks & Accessories / **CR Series**

- Available in 2 versions
- Delivery completely mounted
- 2 mm steel plate
- Cable inserts at top and bottom
- Holes for floor fixation
- Suitable cage nut: Typ W (1.8 – 2.6 mm)
- Colour: black

EN 54 16

	Article number
Rack with rotatable frame, 40 units	CR-SR840
Rack with rotatable frame, 21 units	CR-SR821
Plexiglasdoor for CR-SR840, 40 units	CR-PT840
Plexiglasdoor for CR-SR821, 21 units	CR-PT821
Roof fan completely assembled with thermostat	CR-DL2SET
Internal cabinet equipment with cable channel	CR-ISA
Equipotential bonding rail	CR-PA
Cable flat plate for cables	CR-KFP
Heavy rail, 1 pair right and left	CR-SL2

CR-SR840 + CR-ISA

CR-SR821 + CRPT821

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Racks & Accessories / **CR Series**

	Article number
Tray shelf, 2 units, 19 Inch	SUS-2
Tray shelf, 3 units, 19 Inch	SUS-3
Tray shelf, 2 units, perforated, 19 Inch	PUS-2
Tray shelf, 3 units, perforated, 19 Inch	PUS-3
Drawer 2 units, closed, 19 Inch	UD-2
Drawer 3 units, closed, 19 Inch	UD-3
Front panel 1 units, 19 Inch	SFP-1
Front panel 2 units, 19 Inch	SFP-2
Front panel 3 units, 19 Inch	SFP-3
Front panel, perforated, 1 units, 19 Inch	PFP-1
Front panel, perforated, 2 units, 19 Inch	PFP-2
Front panel, perforated, 3 units, 19 Inch	PFP-3

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Megaphones / **Personal PA System**

Lightweight personal PA System suitable for a wide range of professions.

The ER-1000 is a compact, portable and easy-to-operate personal PA system that delivers high quality sound. The system works with TOA's headsets giving the user flexibility to choose the option that best suits them, whilst keeping both hands free. This system fits snugly around the users waist with a slightly curved design and adjustable waistband. It is ultra lightweight at 480 g, yet with a maximum output of 10 W and a maximum audible range of 80 meters. It is controlled by a large rotating volume control and an independent power on/off switch for easy knob and switch operation even with a gloved hand. Six alkaline AA dry batteries provide up to 8 hours of use.

Features

• Compact and with powerful, high-quality sound
• Easy to wear and easy to operate
• Compatible with an audio player
• Low power consumption and long hours of
  operation

Applications

• Bus drivers
• School teachers
• Tour guides
• Trade show personnel
• Sports instructors
• Volunteer staffs
• Police officers

Megaphones / Personal PA System / **ER-1000BK-EB**

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Features

• Ultra-light weight
• Easy to wear and easy to operate
• Can be wrapped snugly around the waist
• Large rotating volume control and independent
  power on/off switch
• Audio player input
• AUX input terminal allows PA announcements to
  be made while BGM is being played
• Low power consumption for long operation time

Options

• WH-4000A: Headset
• WH-4000H: Headset

Applications

• Bus drivers
• School teachers
• Tour guides
• Trade show personnel
• Sports instructors
• Volunteer staffs
• Police officers

Specifications

	ER-1000BK-EB
Power Source	Alkaline battery (LR6): 6 pieces (9 V DC) or 4 pieces (6 V DC) Rechargeable nickel metal hydride (Ni-MH) battery (HR15/51): 6 pieces (7.2 V DC) or 4 pieces (4.8 V DC) Black manganese battery (R6PU): 6 pieces (9 V DC) or 4 pieces (6 V DC)
Input	MIC: -30 dB, 3 kΩ, 3.5 mm monaural mini-jack, phantom power supply AUX: -10 dB, 2 kΩ, 3.5 mm stereo mini-jack (supporting monaural applications
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 (6 V DC) are used
Battery Life	Voice operation: Approx. 8 hours (when 6 alkaline batteries are used) AUX stereo input operation (music reproduction): Approx. 4.5 hours (when 6 alkaline batteries are used) Approx. 5.5 hours (when 6 Ni-MH batteries are used) Approx. 3 hours (when 6 black manganese batteries are used)
Frequency Response	300 Hz – 14 kHz (deviation: -26 dB)
Finish	Front case / Rear case: ABS resin, black / Grille: Surface-treated steel plate, black, paint / Belt: Elastic rubber, black
Dimensions (W x H x D)	133 × 96 × 222 mm
Weight	Main PA unit (belt included, batteries excluded): 480 g / Headset microphone: 50 g / Extension belt: 40 g

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Megaphones

Effective communications for any situation.

TOA offers an extensive range of portable power megaphones that provide optimal reinforcement for various applications in different environments such as schools, government organization facilities, factories and many others.

All models incorporate antibacterial treatment to cope with multi-user environments. Featuring compact and stylish designs with powerful outputs, TOA megaphones also include splash-resistant types as well as high-performance shoulder types that provide a separate auxiliary input and even wireless microphone capability (ER-2930W). Other features such as siren (S) and whistle (W) are available on some models. Sizes and weights range from powerful shoulder type megaphones with a maximum 45W output to light, compact models.

The speaker features rugged polyimide (PI) materials for the diaphragms and neodymium magnets to achieve exceptional acoustic performance. Excellent battery life from AA, C or D batteries (depending on megaphone model) provides significantly longer performance.

■ Voice   ■ Whistle   ■ Siren

ER-1203
ER-1206
ER-1206W
ER-1206S

ER-520
ER-520W
ER-520S
ER-1215
ER-1215S

ER-2215
ER-2215W
ER-3215
ER-2930W
ER-2230W

0   250   500   750   1000m

Features

• Antibacterial treatment
• Powerful outputs
• Excellent battery life
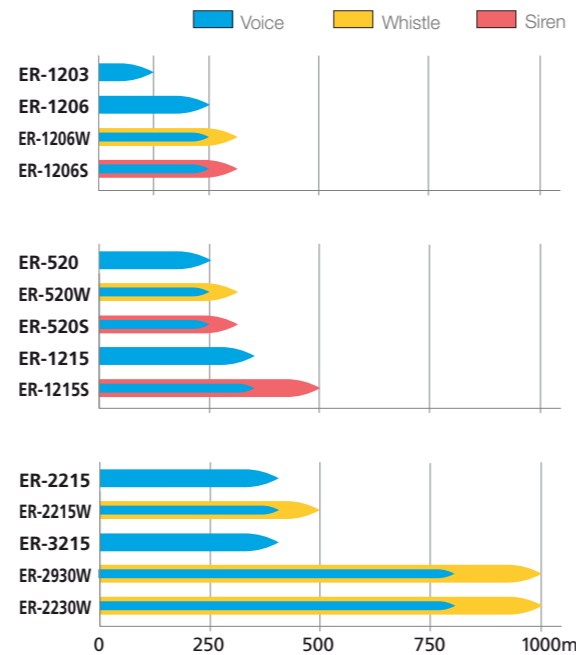
Applications

• Schools
• Government organization facilities
• Factories
• Sports

Megaphones / **ER-1203 / ER-1206 / ER-1206W / ER-1206S**

ER-1203   ER-1206W

ER-1206 with Wall Bracket   ER-1206S

IPX5

ER-1203

• Compact & lightweight
• Easy change of batteries
• Directional microphone with press-to-talk switch

ER-1206 / ER-1206W / ER-1206S

• Compact & lightweight
• Good sound quality due to wide frequency response
• Directional microphone with press-to-talk switch
• Neodymium magnet for high performance
• Battery saving operation
• Rugged enclosure

Applications

• Security service
• Police
• Sports

Options

• SP-1100: Wall Bracket

Options

• SP-1100: Wall Bracket

Specifications

	ER-1203	ER-1206	ER-1206W	ER-1206S
Rated Output	3 W (4 W max.)		6 W (10 W max.)	
Signals		-	Whistle	Siren
Audible Range approx.	125 m		Voice 250 m	
Batteries: Qty / Type	4 x 1,5 V (AA/R6P)		6 x 1,5 V (AA/R6P)	
Battery Life		Approx. 8 hours		
Battery Life on Signal		-	20 min	
Finish	ASA resin, clear dark gray	ASA resin, Horn: clear dark gray / Other: dark grey	ASA resin, Horn: clear dark gray / Other: yellow	ASA resin, Horn: clear red / Other: dark red
Dimensions (W x H x D)	137 x 257.8 x 210 mm		154 x 266 x 250 mm	
Weight	610 g	660 g	680 g	

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Megaphones / **ER-520 / ER-520W / ER-520S**

ER-520 / ER-520W

ER-520S

IPX5

Features

- Compact & cost-effective model
- Reflex trumpet horn
- Undirectional dynamic microphone with press-to-talk switch
- Operates on 8 x R6 type batteries (option)

Applications

- Security service
- Police
- Fireworkers
- Each kind of demonstration

Specifications

	ER-520	ER-520W	ER-520S
Rated Output	6W (10W max.)		
Signals	-	Whistle	Siren
Audible Range approx.	Voice 250m	Voice 250m, Signal 315m	
Batteries: Qty / Type	8 x 1,5V (AA/R6P)		
Battery Life	Approx. 10 hours (voice)		
Battery Life on Signal	-	30min	40min
Finish	ABS-resin: white and grey		ABS-resin: red
Dimensions (W x H x D)	160 x 256 x 260mm		
Weight	620g		650g

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Megaphones / **ER-1215 / ER-1215S / ER-3215**

ER-1215S

ER-1215

ER-3215

IPX5

Features

- Compact megaphone with good sound quality due to wide frequency response
- High audible range
- Neodym magnet for high power
- Polyimide diaphragm
- Low power consumption
- Rugged enclosure
- Howl-free unidirectional dynamic microphone with press-to-talk switch
- ER-3215 with additional handheld microphone

Applications

- Security service
- Police
- Fireworkers
- Trade union
- Each kind of demonstration

Specifications

	ER-1215	ER-1215S	ER-3215
Rated Output	15W (23W max.)		
Signals	-	Siren	-
Audible Range approx.	Voice 315m	Voice 315m, signal 500m	Voice 400m
Batteries: Qty / Type	6 x 1,5V (R 14)		
Battery Life	Approx. 14 hours (voice)	Approx. 14 hours (voice)	Approx. 9 hours (voice)
Battery Life on Signal	-	Approx. 20 minutes	-
Finish	ABS-resin, Horn: light grey / Other: grey	ABS-resin, red	ABS-resin, Horn: light grey / Other: grey
Dimensions (W x H x D)	210 x 291 x 346mm		210 x 291 x 381mm
Weight	1.1 kg	1.2 kg	1.3 kg (incl. microphone)

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Megaphones / **ER-2215 / ER-2215W**

ER-2215 / ER-2215W

- Compact megaphone with shoulder strap and instant-on amplifier
- High audible range
- Handheld microphone
- Howl-free unidirectional dynamic microphone with press-to-talk switch
- Improved endurance

Options

- ST-16A: Stand

Applications

- Security service
- Police
- Fireworkers
- Each kind of demonstration

Specifications

	ER-2215	ER-2215W
Rated Output	15 W (23 W max.)	
Signals	-	Whistle
Audible Range approx.	400 m	400 m (500 m whistle)
Batteries: Qty / Type	6 x 1,5 V (R 14)	
Battery Life	Approx. 9 hours (voice)	
Battery Life on Signal	-	20 min
Finish	ABS-resin, grey, light grey	
Dimensions (ø x D)	210 x 336 mm	
Weight	1.2 kg (incl. microphone)	1.3 kg (incl. microphone)

Megaphones / **ER-2230W / ER-2930W**

ER-2230W

ER-2930W

ER-2230W

- High power shoulder megaphone for extreme long distance messages
- Whistle signal
- Splash-proof cover included
- Microphone lock switch
- Auxiliary-input with volume control for tape or radio and earphone output
- Power plug cord (for 12 V battery) included

Options

- ST-16A: Stand
- DM-1100, DM-1300: Microphones

ER-2930W

- High power megaphone with shoulder strap for extreme long distance messages
- Whistle signal
- Splash-proof cover included
- Equipped with a receptacle for optional wireless microphone module
- Built-in antenna
- Auxiliary-input with volume control for tape or radio and earphone output
- External power input (12 V battery)

Options

- ST-16A: Stand
- WTU-4800: Tuner Module
- Wireless Microphones e.g. WM-5225

Applications

- Security service
- Police
- Fireworkers
- Trade union
- Each kind of demonstration

Specifications

	ER-2230W	ER-2930W
Rated Output	30 W (45 W max.)	
Signals	Whistle	
Audible Range approx.	800 m, Whistle 1,000 m	
Batteries: Qty / Type	10 x 1,5 V (R 20P)	
Battery Life	Voice 17 hours	
Battery Life on Signal	1.5 hours	
Ext. MIC Input	600 Ω, unbalanced, ø6.6 phone jack, stereo plug acceptable, volume control	
Finish	Horn: Aluminium / Case top: Die-cast aluminium / Others: ABS-resin, light grey, grey	
Dimensions (ø x D)	351 x 512 mm	
Weight	3.75 kg (incl. microphone)	3.95 kg (incl. microphone)

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'Pounding feet, puffing and panting, the clanging of weights – yet still hear the trainer's instructions for the next exercise.'

TOA has been developing wireless microphone systems for different uses since 1965. With our many years of experience, we continue to develop innovative, top-class products for musicians, actors and fitness trainers. Whether microphones, headsets, radio receivers or pocket transmitters, TOA supplies everything from a single source, leaving you free to concentrate on the main task at hand.

TOA makes you fit!

Yours, Dr. Sound

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S4.04 Series

Getting you started into the wireless world.

Our S4.04 is the perfect entry level system into the world of wireless technology. It is the improved successor model of our thousand times proven and reliable S4.4 system.

No matter whether it's for vocals, speech or instrument applications, you will have this system up and running in no time and will be able to use it absolutely worry-free. The S4.04 already provides the same great sound quality as our larger S4.10 system; however, it is limited to a maximum channel count of four. But this should already be perfectly adequate for most small to medium applications.

With only a single AA battery our S4.04 comes up to 10 hours of power. By automatic frequency scanning, automatic frequency selection and the integrated infrared synchronization it is ias well ncredibly easy to set up. For all kinds of speech applications as well as for bands, where up to two members will need freedom of movement, our S4.04 is exactly the right choice – and by the way its price-performance ratio is unbeatable. Unpack, plug in, and rock!

Available sets:

• Receiver & Bodypack Transmitter (S4.04-B-EB)
• Receiver & Handheld Microphone (S4.04-HD-EB)
• Receiver, Bodypack Transmitter & Lavalier Microphone (S4.04-L-EB)

Features
• Multi-channel-capable
• Up to 4 simultaneous channels
• 4 selectable frequencies
• It covers inter alia registration free operation
   frequency band

Accessories
• Lavaliers & Headsets - Page 266
• Accessories - Page 287

Applications
• Speech
• Vocal
• Instruments

S4.04 Series / Space Diversity Receiver / **S4.04-RX-EB**

Features
• Compact, robust wireless receiver for small setups
   with four channels
• Ease of use - have it running within seconds
   thanks to fixed rod antennae

Available Sets
• S4.04-B-EB: Set incl. Receiver and Bodypack
   Transmitter (742 – 865 MHz)*
• S4.04-HD-EB: Set incl. Receiver and Handheld
   Microphone (742 – 865 MHz)*
• S4.04-L-EB: Set incl. Receiver, Bodypack Trans-
   mitter and Lavalier Microphone (742 – 865 MHz)*

Specifications

	S4.04-RX-EB
Frequency Range	*Please contact your national authority to obtain information on authorized frequencies for this wireless systems in your region.
Selectable Frequencies/ Simultaneous Channels	4
AF Response	50 Hz – 15 kHz
Audio Outputs	XLR balanced, phone jack unbalanced
Audio Output Level (max.)	XLR: -20 dBU, phone jack: +10 dBU
Sensitivity	10 uV at 45 dBA S/N
Power Supply	12 VDC, 500 mA
Finish	Resin, black
Dimensions (W x H x D)	214 x 39 x 102 mm (excl. antenna and BNC)
Weight	480 g
Other Features	Channel Scan, IR sync, Battery life information

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S4.04 Series / Bodypack Transmitter / **S4.04-BTX-EB**

Features

- Reliable and easy-to-use UHF bodypack trans-
  mitter
- Provides 4 frequencies, a battery status LED and
  an on/off switch
- With only a single AA battery our S4.04 comes up
  to 10 hours of power

- Mic / line selection switch for adjusting the input
  sensitivity and a gain control
- Instruments, headset or lavalier microphones are
  connected using a screwable 3.5 mm jack plug
  that will securely stay in place during performan-
  ces

Available Sets

- S4.04-B-EB: Set incl. Receiver and Bodypack
  Transmitter (742 – 865 MHz)*
- S4.04-L-EB: Set incl. Receiver, Bodypack Trans-
  mitter and Lavalier Microphone (742 – 865 MHz)*

Specifications

	S4.04-BTX-EB
Frequency Range	*Please contact your national authority to obtain information on authorized frequencies for this wireless systems in your region.
Selectable Frequencies/ Simultaneous Channels	4
RF Output Power	10 mW
Audio Input Level	-6 dBV (max.), mic gain 0 dB
AF Response	50 Hz – 15 kHz
Modulation System	PLL synthesizer
Battery	1 x 1.5 V (AA size alkaline battery)
Operating Time	≈ 10 h
Finish	Resin, black
Dimensions (W x H x D)	62 x 100 x 25 mm (incl. clip)
Weight	85 g (incl. battery)
Other Features	Battery status LED, several status LEDs

S4.04 Series / Handheld Microphone / **S4.04-HDX-EB**

Features

- Powerful vocal and speech microphone with
  a high-quality dynamic capsule and a cardioid
  pickup pattern
- Power switch is located on the microphone base
  and is therefore protected against accidental
  operation

- Integrated channel LED
- Power LED
- Offers about 10 hours of continuous operation
  with only a single battery

Available Sets

- S4.04-HD-EB: Set incl. Receiver and Handheld
  Microphone (742 – 865 MHz)*

Specifications

	S4.04-HDX-EB
Frequency Range	*Please contact your national authority to obtain information on authorized frequencies for this wireless systems in your region.
Selectable Frequencies/ Simultaneous Channels	4
RF Output Power	10 mW
Microphone Capsule	Dynamic
Pickup Pattern	Cardioid
AF Response	80 Hz – 15 kHz
Audio Input Level	140 dB SPL (max.)
Modulation System	PLL synthesizer
Battery	1 x 1.5 V (AA size alkaline battery)
Operating Time	≈ 10 h
Finish	Resin, black
Dimensions (ø x L)	50 x 250 mm
Weight	245 g (incl. battery)
Other Features	Battery status LED, several status LEDs

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S4.10 Series

Unbeatable in price and performance!

There is no easier way to create a multi-channel wireless system than with the S4.10. The S4.10 is a multi-channel-capable wireless system, which allows you to master a wide variety of challenges with up to ten simultaneous channels. No matter whether it's for vocals or speech using a handheld microphone or for instrument pickup using a bodypack transmitter – the S4.10 performs well.

The S4.10 offers great sound whose level simply regulate by use of the volume potentiometer on the rear panel. Furthermore our S4.10 series provides a robust wireless connection at an unbeatable price-performace-ratio.

It is aimed at amateur and semi-professional musicians who do not want to do without a reliable wireless system. Due its detachable antennas the S4.10 series ideally suited for fixed installations with tight budgets.

Available sets:

• Receiver & Bodypack Transmitter (S4.10-B-EB)
• Receiver & Handheld Microphone (S4.10-HD-EB)
• Receiver, Bodypack Transmitter & Lavalier Microphone (S4.10-L-EB)

Features

• Multi-channel-capable
• Up to 10 simultaneous channels
• 16 selectable frequencies
• It covers inter alia registration free operation frequency band

Accessories

• Lavaliers & Headsets - Page 266
• Accessories - Page 287

Applications

• Speech
• Vocal
• Instruments
• Aerobic
• Fixed installations

S4.10 Series / Space Diversity Receiver / **S4.10-RXA-EB**

Features

• Compact and rugged design
• 16 selectable frequencies
• BNC antenna inputs for connecting external antennae
• Status LEDs on the front panel provide a quick overview of the power supply, the strength of the received signal, the automatic antenna selection and eventual audio clipping
• One potentiometer for control of the audio output and the mute levels for the integrated squelch circuit

Available Sets

• S4.10-B-EB: Set incl. Receiver and Bodypack Transmitter (719 – 865 MHz)*
• S4.10-HD-EB: Set incl. Receiver and Handheld Microphone (719 – 865 MHz)*
• S4.10-L-EB: Set incl. Receiver, Bodypack Transmitter and Lavalier Microphone (719 – 865 MHz)*

Specifications

	S4.10-RXA-EB
Frequency Range	*Please contact your national authority to obtain information on authorized frequencies for this wireless systems in your region.
Selectable Frequencies	16
Simultaneous Channels	10
AF Response	50 Hz – 15 kHz
Audio Outputs	XLR balanced, ¼" jack unbalanced
Audio Output Level (max.)	XLR: +16 dBU, ¼" jack: +10 dBU
Sensitivity	10 uV at 45 dBA S/N
Power Supply	12 VDC, 500 mA
Finish	Resin, black
Dimensions (W x H x D)	215 x 39 x 102 mm (excl. antenna and BNC)
Weight	480 g
Other Features	Channel Scan, IR sync, Battery life information

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S4.10 Series / Bodypack Transmitter / **S4.10-BTX-EB**

Features

- Reliable and easy-to-use UHF bodypack transmitter
- Provides 16 frequencies, of which 10 can be used simultaneously
- Instruments, headset or lavalier microphones are connected using a screwable 3.5 mm jack plug that will securely stay in place during performances
- Mic/line selection switch for adjusting the input sensitivity and a gain control
- Provides a battery status LED and an On/Off switch
- Comes up to 10 hours of power with only a single AA battery

Available Sets

- S4.10-B-EB: Set incl. Receiver and Bodypack Transmitter (719 – 865 MHz)*
- S4.10-L-EB: Set incl. Receiver, Bodypack Transmitter and Lavalier Microphone (719 – 865 MHz)*

Specifications

	S4.10-BTX-EB
Frequency Range	*Please contact your national authority to obtain information on authorized frequencies for this wireless systems in your region.
Selectable Frequencies	16
Simultaneous Channels	10
RF Output Power	10 mW
Audio Input Level	-6 dBV (max.), mic gain 0 dB
AF Response	50 Hz – 15 kHz
Modulation System	PLL synthesizer
Battery	1 x 1.5 V (AA size alkaline battery)
Operating Time	≈ 10 h
Finish	Resin, black
Dimensions (W x H x D)	62 x 100 x 25 mm (incl. clip)
Weight	85 g (incl. battery)
Other Features	Battery status LED, several status LEDs, audio level controller

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S4.10 Series / Handheld Microphone / **S4.10-HDX**

Features

- Powerful vocal and speech microphone with a high-quality dynamic capsule and a cardioid pickup pattern
- Provides 10 frequencies for working with the S4.16-RX receiver to choose a suitable frequency according to the local requirements
- Power switch is located on the microphone base and is therefore protected against accidental operation
- Provides an integrated channel LED and microphone sensitivity controller (H= 0 dB, L= -10 dB)
- Power LED informs about battery status
- Offers about 10 hours of continuous operation with only a single AA battery

Available Sets

- S4.10-HD-EB: Set incl. Receiver and Handheld Microphone (719 – 865 MHz)*

Specifications

	S4.10-HDX-EB
Frequency Range	*Please contact your national authority to obtain information on authorized frequencies for this wireless systems in your region.
Selectable Frequencies	16
Simultaneous Channels	10
RF Output Power	10 mW
Microphone Capsule	Dynamic
Pickup Pattern	Cardioid
AF Response	80 Hz – 15 kHz
Audio Input Level	140 dB SPL (max.)
Modulation System	PLL synthesizer
Battery	1 x 1.5 V (AA size alkaline battery)
Operating Time	≈ 10 h
Finish	Resin, coated
Dimensions (ø x L)	approx. 50 x 250 mm
Weight	approx. 245 g (incl. battery)
Other Features	Battery status LED, several status LEDs, microphone sensitivity controller

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S4 Series / **Lavaliers & Headsets**

MIC-LP2 (black)

Features

- Thousand times proven, rugged microphone at an absolutely unbeatable price
- Cardioid polar pattern also available

- Electret condenser capsule, omnidirectional
- Max. SPL: >120 dB
- Frequency Response: 60 Hz – 16 kHz ±3 dB

MIC-SJ55 (black)
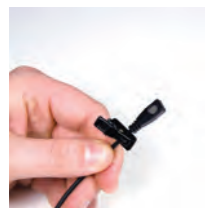
Features

- Miniature lavalier microphone
- Recessed capsule for easy attachment to/under clothing
- Special design effectively prevents contact and cloth noise

- Electret condenser capsule, omnidirectional
- Max. SPL: >120 dB
- Frequency Response: 30 Hz – 16 kHz ±3 dB

MIC-SJ212-B-R (black)
MIC-SJ212-P-R (beige)
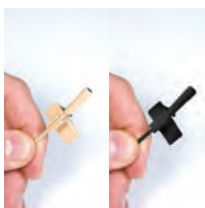
Features

- Sub-miniature microphone for the most demanding live applications
- Suitable for speech/vocal and instrument applications

- Electret condenser capsule, omnidirectional
- Max. SPL: >120 dB
- Frequency Response: 40 Hz – 18 kHz ±3 dB

MIC-SJ22-B-R (black)
MIC-SJ22-P-R (beige)

Features

- One of the smallest and lightest headsets on the market
- Extremely light but ultra-flexible headband made of a special nylon composite
- Perfectly adaptable to any head shape

- Electret condenser capsule, omnidirectional
- Max. SPL: >120 dB
- Frequency Response: 40 Hz – 18 kHz ±3 dB

S4 Series / **Lavaliers & Headsets**

MIC-SJ33 (black)

Features

- Thousand times proven, rugged microphone at an absolutely unbeatable price
- Cardioid polar pattern also available

- Electret condenser capsule, omnidirectional
- Max. SPL: >120 dB
- Frequency Response: 60 Hz–16 kHz ±3 dB

MIC-SJ66-BK (black)
MIC-SJ66-BL (blue)
MIC-SJ66-YE (yellow)

Features

- Bestseller headset when it comes to fitness, aerobics and workout
- Comfortable tight fit and extremely robust construction
- Protection against the ingress of moisture

- Electret condenser capsule, super cardioid
- Max. SPL: 125 dB
- Frequency Response: 60Hz – 16kHz ±3dB

MIC-SJEM77 (beige)

Features

- Earworn microphone
- Extremely low weight
- Ensures complete freedom of movement
- Ideal for a variety of applications

- Electret condenser capsule, omnidirectional
- Max. SPL: >120dB
- Frequency Response: 20 Hz – 20 kHz ±3 dB

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06 WIRELESS SYSTEMS /

S5.3 Series

Highest quality for highest demands.

With our S5.3 system you move up into the professional class of wireless microphones.

The S5.3 is a superbly crafted wireless system with all receivers and transmitters designed in robust metal housings. Its excellent audio quality and reliable wireless technology make this system the ideal choice for music applications of all kinds.

To build up your S5.3 system there is a receiver, a bodypack transmitter as well as a dynamic and a condenser handheld microphone to choose from.

S5.3-RX, S5.3-BTX with MIC-X66-BL
(available separately)

S5.3-RX, S5.3-BTX with MIC-XEM77
(available separately)

S5.3-RX, S5.3-BTX with MIC-X33
(available separately)

Features

- True diversity operation system
- 640 selectable frequencies
- Automatic frequency scan
- Simple operation using LCD screen and jog wheel
- Infrared synchronization between transmitter and receiver
- Rugged metal housings

Accessories

- Lavaliers & Headsets - Page 276
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Applications

- Speech
- Vocal
- Instruments
- Theater
- Aerobic
- Fixed installations

S5.3 Series / True Diversity Receiver / **S5.3-RX**

Features

- True diversity operation
- 640 selectable frequencies
- Software monitoring
- Automatic frequency scanning
- Triple-squelch

- LCD screen
- Infrared synchronization
- Full metal housings and many more

Options

- Monitoring software (only for Windows XP)
- ACC-S5RX-MB1: Rack Mount Kit
- ACC-S5RX-MB2: Rack Mount Kit

Specifications

	S5.3-RX-C7EUQ
Frequency Range	Please contact your national authority to obtain information on authorized frequencies for this wireless systems in your region.
Selectable Frequencies	640 (presets: 9 banks with max. 12 frequencies each)
Simultaneous Channels	Max. 12 per frequency band
Automatic Frequency Scan	Yes
Diversity Principle	True diversity (dual receiver)
IR-Synchronization	Yes
AF Response	50 Hz – 20 kHz
Audio Outputs	XLR balanced (mic/line selectable), ¼" jack unbalanced
Nominal Output Level	Mic/line selectable, mic: -27 dBV, line: +13 dBV
SNR (audio output)	110 dB(A)
Audio Mixing Input	No
Antenna Inputs	2 x BNC (50 Ω)
Antenna Outputs	No
Power Supply	300 mA, 11 – 18 V DC
Finish	Metal
Dimensions (W x H x D)	210 x 46 x 210 mm
Weight	1.3 kg
Other Features	Headphone output, LCD, adjustable triple-squelch

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S5.3 Series / Bodypack Transmitter / **S5.3-BTX**

Features

- LCD screen
- Battery status LED
- Detachable antenna
- Infrared sync
- 10-step gain
- Belt clip

Specifications

	S5.3-BTX-C7 Q
Frequency Range	Please contact your national authority to obtain information on authorized frequencies for this wireless systems in your region.
Selectable Frequencies	640 (presets: 9 banks with max. 12 frequencies each)
RF Output Power	10 mW ERP
Audio Input	TA4 (Mini-XLR, 4-pin.; self-locking)
AF Response	60 Hz – 20 kHz
Input Sensitivity	-22 dBV ... 0 dBV (adjustable)
Battery	1 x AA
Operating Time	≈ 10 h
Finish	140 g (incl. battery)
Dimensions (W x H x D)	55 x 80 x 22 mm
Weight	Metal
Other Features	Infrared sync, LCD, battery status LED, detachable antenna

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S5.3 Series / Handheld Microphone / **S5.3-HDX / S5.3-HCX**

Features

- Full-metal housing is extremely durable, well weighted and highly ergonomical
- LCD screen
- 1x AA battery allows up to 10 hours of continuous operation
- Infrared sensor for synchronization between the mic and the receiver
- Pickup pattern ensures that ambient noise will be most effectively suppressed compared to frontal sources
- Integrated antenna
- Premium look, matt black finish of its body and grill

Specifications

	S5.3-HDX-C7 Q	S5.3-HCX-C7 Q
Frequency Range	Please contact your national authority to obtain information on authorized frequencies for this wireless systems in your region.	
Selectable Frequencies	640 (presets: 9 banks with max. 12 frequencies each)	
RF Output Power	10 mW ERP	
Microphone Capsule	Dynamic	Electret condenser
Pickup Pattern	Hypercardioid	Cardioid
AF Response	60 Hz – 20 kHz	90 Hz – 20 kHz
Maximum SPL	146 dB SPL (gain = 0)	142 dB SPL (gain = 0)
Battery	1 x AA	
Operating Time	≈ 10 h	
Finish	Metal	
Dimensions (ø x L)	50 x 247.9 mm	50 x 232.9 mm
Weight	380 g (incl. battery)	300 g (incl. battery)
Other Features	Mute switch, LCD, battery LED, integrated antenna, 3-step gain, infrared sync	

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06 WIRELESS SYSTEMS /

S5.5 Series

For highest demands & maximum number of channels.

With the big brother of the S5.3 system you'll be able to manage projects of any size.

The S5.5 Series is an advanced UHF system offering 35 MHz of switching bandwidth. It allows for simultaneous operation of up to 24 channels per frequency band – and all this at a price performance ratio that you will find hard to match.

S5.5-RX, S5.5-BTX with MIC-X66-BL
(available separately)

S5.5-RX, S5.5-BTX with MIC-XEM77
(available separately)

S5.5-RX, S5.5-BTX with MIC-X2
(available separately)

Features

- True diversity operation
- 1,400 selectable frequencies
- Automatic frequency scan
- Simple operation using LCD screen and jog wheel
- Infrared synchronization between transmitter and receiver
- Rugged metal housings

Accessories

- Lavaliers & Headsets - Page 276
- Accessories - Page 287 et seq.

Applications

- Speech
- Vocal
- Instruments
- Theater
- Fixed installations

S5.5 Series / True Diversity Receiver / **S5.5-RX**

Features

- 24 simultaneous channels per bank
- Software monitoring/programming
- Automatic frequency scanning
- Triple-squelch
- Full-metal housing

- LCD screen
- Infrared sync, USB port, EQ, phase reversal, mic/line switch, headphone output, BNC antenna inputs

Options

- Monitoring & programming software (only for Windows XP)
- ACC-S5RX-MB1: Rack Mount Kit
- ACC-S5RX-MB2: Rack Mount Kit

Specifications

	S5.5-RX
Frequency Range	Please contact your national authority to obtain information on authorized frequencies for this wireless systems in your region.
Selectable Frequencies	1,400 (presets: 10 banks with max., 24 frequencies each)
Simultaneous Channels	Max. 24 per frequency band
Automatic Frequency Scan	Yes
Diversity Principle	True diversity (dual receiver)
IR-Synchronization	Yes
AF Response	50 Hz – 20 kHz
Audio Outputs	XLR balanced (mic/line selectable), ¼" jack unbalanced
Nominal Output Level	Mic/line selectable, mic: -27 dBV, line: +13 dBV
SNR (audio output)	110 dB(A)
Audio Mixing Input	No
Input Sensitivity	—
Antenna Inputs	2 x BNC (50 Ω)
Antenna Outputs	No
Power Supply	300 mA, 11 – 18 VDC
Finish	Metal
Dimensions (W x H x D)	210 x 46 x 210 mm
Weight	1.3 kg
Other Features	Headphone output, LCD, adjustable triple-squelch

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S5.5 Series / Bodypack Transmitter / **S5.5-BTX**

Features

- LCD screen
- Battery status LED
- Detachable antenna
- Infrared sync
- 10-step gain
- 1x AA battery for about 10 hours of continuous use
- Belt clip

Specifications

	S5.5-BTX
Frequency Range	Please contact your national authority to obtain information on authorized frequencies for this wireless systems in your region.
Selectable Frequencies	1,400 (presets: 10 banks with max. 24 frequencies each)
RF Output Power	10 mW ERP
Audio Input	TA4 (Mini-XLR, 4-pin.; self-locking)
AF Response	60 Hz – 20 kHz
Input Sensitivity	-22 dBV ... 0 dBV (adjustable)
Battery	1 x AA
Operating Time	≈ 10 h
Finish	Metal
Dimensions (W x H x D)	55 x 80 x 22 mm
Weight	140 g (incl. battery)
Other Features	Infrared sync, LCD, battery status LED, detachable antenna

S5.5 Series / Dynamic Handheld Microphone / **S5.5-HDX / S5.5-HCX**

Features

- Offering 1,400 transmission frequencies
- Extremely durable full-metal housing
- LCD screen
- Up to 10 hours of continuous operation with a single AA battery
- Infrared sensor for synchronization between the mic and the receiver
- Mute switch
- Pickup pattern, which ensures that ambient noise will be most effectively suppressed compared to frontal sources as your mouth
- Integrated antenna
- Premium look, matt black finish of its body and grill

Specifications

	S5.5-HDX	S5.5-HCX
Frequency Range	Please contact your national authority to obtain information on authorized frequencies for this wireless systems in your region.	
Selectable Frequencies	1,400 (presets: 10 banks with max. 24 frequencies each)	
RF Output Power	10 mW ERP	
Microphone Capsule	Dynamic	Electret condenser
Pickup Pattern	Hypercardioid	Cardioid
AF Response	60 Hz – 20 kHz	90 Hz – 20 kHz
Maximum SPL	146 dB SPL (gain = 0)	142 dB SPL (gain = 0)
Battery	1 x AA	
Operating Time	≈ 10 h	
Finish	Metal	
Dimensions (ø x L)	50 x 247.9 mm	50 x 232.9 mm
Weight	380 g (incl. battery)	300 g (incl. battery)
Other Features	EQ & phase, mute switch, LCD, battery LED, integrated antenna, 3-step gain, infrared sync	

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S5 Series / **Lavaliers & Headsets**

MIC-X2 (black)

Features

- Thousand times proven, rugged microphone
- Omnidirectional electret condenser capsule
- Cardioid polar pattern also available

- Electret condenser capsule, omnidirectional
- Max. SPL: >120 dB
- Frequency Response: 60 Hz – 16 kHz ±3 dB

MIC-X55 (black)
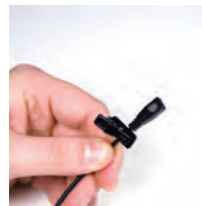
Features

- Miniature lavalier microphone
- Recessed capsule for easy attachment to/under clothing
- Special design effectively prevents contact and cloth noise

- Electret condenser capsule, omnidirectional
- Max. SPL: >120 dB
- Frequency Response: 30 Hz – 16 kHz ±3 dB

MIC-X212-B-R (black)
MIC-X212-P-R (beige)
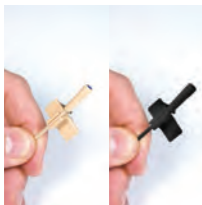
Features

- Sub-miniature microphone for the most demanding live applications
- Suitable for speech/vocal and instrument applications

- Electret condenser capsule, omnidirectional
- Max. SPL: >120 dB
- Frequency Response: 40 Hz – 18 kHz ±3 dB

MIC-X22-B-R (black)
MIC-X22-P-R (beige)

Features

- One of the smallest and lightest headsets on the market
- Extremely light but ultra-flexible headband made of a special nylon composite
- Perfectly adaptable to any head shape

- Electret condenser capsule, omnidirectional
- Max. SPL: >120 dB
- Frequency Response: 60 Hz – 16 kHz ±3 dB

S5 Series / **Lavaliers & Headsets**

MIC-X33 (black)

Features

- Provides good speech intelligibility, especailly during presentations
- Comes with a matching foam windscreen and at a bargain price

- Electret condenser capsule, omnidirectional
- Max. SPL: >120 dB
- Frequency Response: 20 Hz – 16 kHz ±3 dB

MIC-X66-BK (black)
MIC-X66-BL (blue)
MIC-X66-YE (yellow)

Features

- Bestseller headset when it comes to fitness, aerobics and workout
- Comfortable tight fit and extremely robust construction
- Protection against the ingress of moisture

- Electret condenser capsule, super cardioid
- Max. SPL: 125 dB
- Frequency Response: 60 Hz – 16 kHz ±3 dB

MIC-XEM77 (beige)

Features

- Earworn microphone
- Extremely low weight
- Ensures complete freedom of movement
- Ideal for a variety of applications

- Electret condenser capsule, omnidirectional
- Max. SPL: >120 dB
- Frequency Response: 20 Hz – 20 kHz ±3 dB

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5000 Series

Highest flexibility for fixed installations.

Our 5000 Series is the ideal choice for fixed installations of any kind. Whether in concert halls, event halls, churches, stadiums, schools, conference rooms or elsewhere – on the spark gaps of our 5000 Series you can rely on!

This unique flexibility gives you the freedom you need to dimension your radio system exactly as it is needed, but without being limited in terms of future system expansions in the configuration.

Features

- All transmitters and receivers are combined with one another
- Even the small WT-5810, which is ideal as a portable 1-channel system, can be easily integrated into larger systems
- You can also combine different 5000 series receiver with each other and operate in parallel without intermodulation

Accessories

- Lavaliers & Headsets - Page 285
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Applications

- Speech
- Aerobic
- Fixed installations

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5000 Series / Diversity Receiver / **WT-5810**

Features

- Diversity operation
- Automatic frequency scan
- Additional audio mixing input
- Adjustable triple-squelch
- Battery status indicator
- Provides 16 intermodulation-free frequencies
- Allows simultaneous operation for up to 16 WT-5810 units without running the risk of interferences
- Excellent unit to take to every gig or lecture

Models

- WT-5810 C07ER (798 – 832 MHz)*
- WT-5810 D01ER (837 – 865 MHz)*
- WT-5810 G01ER (606 – 636 MHz)*
- WT-5810 H01ER (576 – 606 MHz)*

Specifications

	WT-5810
Frequency Range	*Please contact your national authority to obtain information on authorized frequencies for this wireless systems in your region.
Selectable Frequencies	16
Simultaneous Channels	Max. 16 [B01/D01/G01/H01]; 8 [C07]
Automatic Frequency Scan	Yes
Diversity Principle	Space diversity (antenna switching)
IR-Synchronization	No
AF Response	100 Hz – 15 kHz
Audio Outputs	XLR balanced (mic), ¼" jack unbalanced (line)
Nominal Output Level	Mic: -30 dBV, line: +10 dBV
SNR (audio output)	≥ 104 dB(A)
Audio Mixing Input	¼" jack unbalanced
Input Sensitivity	Line (-20 dBV)
Antenna Inputs	No (fixed rod antennae)
Antenna Outputs	No
Power Supply	130 mA, 12 V DC
Finish	Metal/resin, black/grey
Dimensions (W x H x D)	206 x 40.6 x 152.7 mm (excl. antennas)
Weight	590 g
Other Features	Battery status LED, channel display, AF peak LED, antenna A/B-LED

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5000 Series / Receiver / **WT-5805 / WT-5800**

WT-5805

WT-5800

WT-5805 / WT-5800

- Automatic frequency scan
- Integrated squelch function
- Ideally suited for fixed installations such as in event locations, multi-purpose and sports halls, plenary and conference venues, churches, auditoriums etc.
- System always select the stronger of the two antenna signals for further processing
- Setup with up to 16 simultaneously operating receivers possible
- Two antenna distribution outputs allow to simply loop through the antenna signals (WT-5800)

Options

- MB-WT3: Rack Mounting Brackets (for rack mounting of one WT-5800/5805 unit)
- MB-WT4: Rack Mounting Brackets (for rack mounting of two WT-5800/5805 and/or WT-4820 units)

Models

- WT-5805 C07ER (798 – 832 MHz)*
- WT-5805 D01ER (837 – 865 MHz)*
- WT-5805 G01ER (606 – 636 MHz)*
- WT-5805 H01ER (576 – 606 MHz)*

- WT-5800 C07ER (798 – 832 MHz)*
- WT-5800 D01ER (837 – 865 MHz)*
- WT-5800 G01ER (606 – 636 MHz)*
- WT-5800 H01ER (576 – 606 MHz)*

Specifications

	WT-5805	WT-5800
Frequency Range	*Please contact your national authority to obtain information on authorized frequencies for this wireless systems in your region.	
Selectable Frequencies	64 (4 banks with 16 frequencies each)	
Simultaneous Channels	Max. 16 [B1/D1/G1/H1]; 8 [C7]	
Automatic Frequency Scan	Yes	
Diversity Principle	Space diversity (antenna switching)	True diversity (dual receiver)
AF Response	100 Hz – 15 kHz	
Audio Outputs	XLR balanced, ¼" jack unbalanced	
Nominal Output Level	Mic/line selectable, mic: -30 dBV, line: +10 dBV	
SNR (audio output)	≥ 110 dB(A)	
Audio Mixing Input	¼" jack unbalanced	
Input Sensitivity	Line (-20 dBV)	
Antenna Inputs	2 x BNC (75 Ω)	
Antenna Outputs	No	2 x BNC (75 Ω)
Power Supply	200 mA, 12 V DC	
Finish	Resin, black	
Dimensions (W x H x D)	210 x 44 x 205.1 mm	
Weight	700 g	
Other Features	LCD with AF-/RF-/battery indicator, adjustable triple-squelch	

5000 Series / Dual Channel Receiver & Tuner Module / **WT-4820 / WTU-4800**

WT-4820

WTU-4800

WT-4820

- Dual channel diversity tuner working with our WTU-4800 tuner modules
- Mountable in a 19" rack using the optional mounting brackets MB-WT4

WTU-4800

- Compact, single channel tuner module
- Designed to work with our UHF wireless transmitters
- Can be used in the WT-4820 dual channel receiver unit or can be integrated into other systems
- Include diversity operation
- Integrated squelch circuit
- 16 intermodulation-free frequencies

Models

Tuner Modul:

- WTU-4800 C07 (798 – 832 MHz)*
- WTU-4800 D01 (837 – 865 MHz)*
- WTU-4800 G01 (606 – 636 MHz)*
- WTU-4800 H01 (576 – 606 MHz)*

Options

- MB-WT3: Rack Mounting Brackets (for rack mounting of one WT-5800/5805 unit)
- MB-WT4: Rack Mounting Brackets (for rack mounting of two WT-5800/5805 and/or WT-4820 units)

Specifications

	WT-4820 ER with 2x WTU-4800 (available separately)	WTU-4800
Frequency Range	*Please contact your national authority to obtain information on authorized frequencies for this wireless systems in your region.	
Selectable Frequencies	16	
Simultaneous Channels	Max. 16 [B1/D1/G1/H1]; 8 [C7]	
Automatic Frequency Scan	No	
Diversity Principle	Space diversity (antenna switching)	
IR-Synchronization	No	
AF Response	50 Hz – 18 kHz	100 Hz – 12 kHz
Audio Outputs	XLR balanced, ¼" jack unbalanced	AF OUT pin; unbalanced
Nominal Output Level	Mixing/Channel selectable, XLR: -12 dBV, ¼" jack: +6 dBV	0 dBV
SNR (audio output)	≥ 80 dB(A)	
Audio Mixing Input	¼" jack unbalanced	No
Input Sensitivity	-20 dBV	n/a
Antenna Inputs	2 x BNC (75 Ω)	2 x ANT pin (75 Ω)
Antenna Outputs	1 x BNC (75 Ω)	No
Power Supply	250 mA, 12 V DC	100 mA, 7 – 12 V DC
Finish	Resin, black	Steel
Dimensions (W x H x D)	210 x 44 x 181 mm	60 x 25 x 139 mm
Weight	770 g (incl. 2 x WTU-4800)	130 g
Other Features	Noise squelch, phantom powering for antennae, mix/solo switch, AF peak LED, antenna A/B-LED	Noise squelch, phantom powering for antennae

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5000 Series / Handheld Microphone / **WM-5225 / WM-5265**

WM-5225

WM-5265

WM-5225

- Condenser microphone with high quality electret condenser capsule, high sensitivity and excellent sound quality
- Slim, extremely lightweight and can be held comfortably and securely
- Comes with an indispensable on/off switch, which at the same time acts as a rolling stopper
- With a maximum SPL of 126 dBSPL it is the right choice for even the most energetic speaker

Options

- WB-2000-2 Y: Rechargeable Battery
- BC-5000-2: Battery Charger
- AD-5000-2 ER: AC-Adapter

WM-5265

- High quality dynamic handheld microphone with a hyper-cardioid pickup pattern
- Slim, extremely lightweight and can be held comfortably and securely
- Comes with an indispensable on/off switch, which at the same time acts as a rolling stopper
- Due to its extremely high maximum sound pressure level it is perfectly suitable for speech as well as vocal applications

Options

- WB-2000-2 Y: Rechargeable Battery
- BC-5000-2: Battery Charger
- AD-5000-2 ER: AC-Adapter

Models

- WM-5225 C07 (798 – 832 MHz)*
- WM-5225 D01 (837 – 865 MHz)*
- WM-5225 G01 (606 – 636 MHz)*
- WM-5225 H01 (576 – 606 MHz)*

- WM-5265 C07 (798 – 832 MHz)*
- WM-5265 D01 (837 – 865 MHz)*
- WM-5265 G01 (606 – 636 MHz)*
- WM-5265 H01 (576 – 606 MHz)*

Specifications

	WM-5225	WM-5265
Frequency Range	*Please contact your national authority to obtain information on authorized frequencies for this wireless systems in your region.	
Selectable Frequencies	64 (4 banks with 16 frequencies each)	
RF Output Power	10 mW ERP	
Microphone Capsule	Electret condenser	Dynamic
Pickup Pattern	Cardioid	Hypercardioid
AF Response	100 Hz – 15 kHz	
Maximum SPL	126 dB SPL	132 dB SPL
Battery	1 x AA type or 1 x TOA WB-2000 (rechargeable option)	
Operating Time	≈ 10 h (with AA), ≈ 13 h (with WB-2000-2 Y)	
Finish	Resin, coated	
Dimensions (ø x L)	43.6 x 231.5 mm	50 x 229 mm
Weight	180 g (incl. battery)	205 g (incl.battery)
Other Features	On/off switch, power/battery LED, integrated antenna	

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5000 Series / Handheld Microphone / **WM-5270**

WM-5270

- Dynamic vocal microphone with a cardioid pickup pattern with excellent sound characteristics
- Robust construction and its well-balanced weight
- On/off-switch is located at the bottom of the microphone body to protect accidentally activation during a live performance
- Highly immune to handling noise and feedback
- Professional vocal microphone for live use within our 5000 Series

Options

- WB-2000-2 Y: Rechargeable Battery
- BC-5000-2: Battery Charger
- AD-5000-2 ER: AC-Adapter

Models

- WM-5270 C07 (798 – 832 MHz)*
- WM-5270 D01 (837 – 865 MHz)*
- WM-5270 G01 (606 – 636 MHz)*
- WM-5270 H01 (576 – 606 MHz)*

Specifications

	WM-5270
Frequency Range	*Please contact your national authority to obtain information on authorized frequencies for this wireless systems in your region.
Selectable Frequencies	64 (4 banks with 16 frequencies each)
RF Output Power	10 mW ERP
Microphone Capsule	Dynamic
Pickup Pattern	Cardioid
AF Response	80 Hz – 15 kHz
Maximum SPL	130 dB SPL (142 dB SPL with -12 dB Pad)
Battery	1 x AA type
Operating Time	≈ 10 h
Finish	Metal, black
Dimensions (ø x L)	48 x 244 mm (ø x L)
Weight	340 g (incl. battery)
Other Features	On/off switch on bottom, power/battery LED, integrated antenna

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5000 Series / Bodypack Transmitter / **WM-5325 / WT-5100**

WM-5325

WT-5100

WM-5325

- UHF bodypack transmitter with excellent range
- Compact and ultra-lightweight and can be carried effortlessly over long periods of time
- Equipped with belt clip and a length-adjustable neck strap
- Wide range coverage and long battery durability
- Specially developed for speech applications
- Suitable Handhelds: WM-5225, WM-5265, WM-5270

Options
- WB-2000-2 Y: Rechargeable Battery
- BC-5000-2: Battery Charger
- BC-5000-6: Battery Charger
- BC-5000-12: Battery Charger
- AD-5000-2 ER: AC-Adapter
- AD-5000-6 ER: AC-Adapter

WT-5100

- Three-color status LED
- 1 x AA battery for 15 hours of continuous operation or 1 x WB-2000 makes it able to operate up to 16 hours
- Easily accessible channel selection to switch one of 16 possible channels
- Connect headphones of your choice by the use of a 3.5 mm mini-jack
- Highly suitable for a variety of scenarios such as guided city and museum tours, interpreting, audio guides, assistive listening etc.

Options
- WB-2000-2 Y: Rechargeable Battery
- BC-5000-2: Battery Charger

Models

- WM-5325 C07 (798 – 832 MHz)*
- WM-5325 D01 (837 – 865 MHz)*
- WM-5325 G01 (606 – 636 MHz)*
- WM-5325 H01 (576 – 606 MHz)*

- WT-5100 C07 (798 – 832 MHz)*
- WT-5100 D01 (837 – 865 MHz)*
- WT-5100 G01 (606 – 636 MHz)*
- WT-5100 H01 (576 – 606 MHz)*

Specifications

	WM-5325	WT-5100
Frequency Range	*Please contact your national authority to obtain information on authorized frequencies for this wireless systems in your region.	
Selectable Frequencies	64 (4 banks with 16 frequencies each)	16
Simultaneous Channels	-	Max. 16 [B1/D1/G1/H1]; 8 [C7]
RF Output Power	10 mW ERP	-
Audio Input /Output	3.5 mm mini-jack (with screw-on cap)	3.5 mm mini-jack
Nominal Output Level	-	-12 dBV (4 mW @ 16 Ω)
AF Response	100 Hz – 15 kHz	200 Hz – 5 kHz
Input Sensitivity	-14 dBV ... -29 dBV (adjustable)	
Battery	1 x Typ-AA or 1 x TOA WB-2000 (rechargeable option)	
Operating Time	≈ 10 h (with AA), ≈ 13 h (with WB-2000 Y)	
Finish	Resin, coated	Resin, grey
Dimensions (W x H x D)	62 x 102.5 x 23 mm	62 x 163.6 x 32.5 mm
Weight	90 g (incl. battery)	125 g (incl. battery)
Other Features	On/off-switch, power/battery LED, integrated antenna	Battery status LED, integrated antenna

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5000 Series / Lavaliers & Headsets

YP-M5300 (black)

Features

- Lavalier microphone
- High maximum input level
- Only 20 g weight including cable
- Electret condenser capsule
- Max. SPL: >120 dB
- Frequency Response: 100 Hz – 12kHz ±3 dB

YP-M5310 (black)

Features

- Lavalier microphone
- Omnidirectional characteristics
- Only 20 g weight including cable
- Electret condenser capsule
- Max. SPL: >110 dB
- Frequency Response: 100 Hz – 15kHz ±3 dB

Q-EM-77 (earworn, beige)
HM-22 EB-Q (headworn, beige)

Features

- Available as earworn and headworn microphone
- Extremely low weight
- Ensures complete freedom of movement
- Ideal for a variety of applications
- Omnidirectional characteristics
- Electret condenser capsule
- Max. SPL: >120 dB
- Frequency Response: 20 Hz – 20 kHz ±3 dB

WH-4000A (black)

Features

- Sports version of the WH-4000H
- Adjustable neckband
- Protection against the ingress of moisture
- Ideally suited for use in gyms and aerobics classes
- Unidirectional characteristics
- Electret condenser capsule
- Max. SPL: 120 dB
- Frequency Response: 80 Hz – 15 kHz ±3 dB

WH-4000H (black)
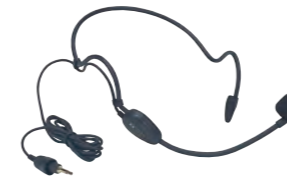
Features

- Comfortable headset
- Designed for voice applications
- Unidirectional characteristics
- Electret condenser capsule
- Max. SPL: 120 dB
- Frequency Response: 80 Hz – 15 kHz ±3 dB

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06 WIRELESS SYSTEMS /

Racked'n'Ready

Ready to use wireless systems to the door.

Our special service for you:

You opt for one of our systems, determine how many channels you need and whether you want it to be mounted inside a professional 19" rack or in a transport-friendly cube (9.5"), and we will deliver the ready-made wireless rack including any freely selectable combination of handheld and bodypack transmitters conveniently to your home.

RNR-S4.10-4C

RNR-S5.3-4C

RNR-S4.10-4R

RNR-S5.3-8R

RNR-S4.10-8R

RNR-S5.3-12R

S4 Series / S5 Series / 5000 Series / **Accessories**

		Article Number
	Antenna Distributor • Active antenna splitter with two antenna inputs for distribution to four output pairs • For larger systems the S5 ADU can be cascaded	S5-ADU-GW
	Antenna Distributor • Active antenna splitter with two antenna inputs for distribution to four output pairs • Connected receivers can be centrally powered via 4 integrated DC outputs	WD-4800
	RF-Amplifier • RF amplifier for use with cable runs (RG58) of 10 – 12 m for connecting remote antennae	YW-7000 G
	Antenna for Wall-/Ceiling Mounting • Omnidirectional dipole antenna for wall or ceiling mounting • By means of the integrated RF amplifier losses induced by long cable runs can be compensated	YW-4500
	Remote Antenna • Omnidirectional UHF antenna for remote mounting an a stand • Radio signals are received equally from all directions	YW-7520 Y
	Remote Antenna • Remote UHF directional antenna for mounting on a stand with increased sensitivity on the main axis to achieve a greater range	YW-7570

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S4 Series / S5 Series / 5000 Series / **Accessories**

		Article Number
	Receiver Antenna • λ/2 rod antenna for UHF reception of S4.10-RXA • Available for two frequency ranges	ANT-4.16RX-D
	Receiver Antenna • λ/4 rod antenna for rear mounting on UHF receivers of the S5 systems • Available for two frequency ranges	ANT-S5RX
	Whip Antenna • Spare antenna for the bodypack transmitters of the S4 and S5 systems	ANT-54BTX-G
	Whip Antenna • Spare antenna for the transmitters of S4 systems	ANT-S4HDX-D
	Antenna Extension Cable • Antenna cable using BNC Panel Mount Socket – BNC Plug with 50 Ω coaxial cable for S5 systems • Length: 35 cm	LD-S5-ANT
	Guitar Cable for S4-Systems • Instrument cable with ¼" mono plug for hooking up a guitar or other line level sources to the bodypack transmitters of the S4 systems • Length: 1.3 m	LD-SJ-JAC
	Guitar Cable for S5-Systems • Instrument cable with ¼" mono plug for hooking up a guitar or other line level sources to the bodypack transmitters of the S5 systems • Length: 1.3 m	LD-X-JAC
	Tie Clips • Spare Tie Clip black for MIC-LP2 (S4 Series), MIC-X2 (S5 Series) and YP-M5310 (5000 Series)	ACC-5200-CLIP
	Tie Clips • Spare Tie Clip beige for MIC-SJ22-B-R and MIC-SJ22-P-R (S4 Series) / MIC-X22-B-R and MIC-X22-P-R (S5 Series), MIC-SJ212-B-R and MIC-SJ212-P-R (S4 Series) / MIC-X212-B-R and MIC-X212-P-R (S5 Series)	ACC-TC-BGE
	Tie Clips • Spare Tie Clip black for MIC-SJ22-B-R and MIC-SJ22-P-R (S4 Series) / MIC-X22-B-R and MIC-X22-P-R (S5 Series), MIC-SJ212-B-R and MIC-SJ212-P-R (S4 Series) / MIC-X212-B-R and MIC-X212-P-R (S5 Series)	ACC-TC-BLK
	Tie Clips • Spare Tie Clip black for MIC-X55 (S5 Series) and MIC-SJ55 (S4 Series)	ACC-5200-TC

S4 Series / S5 Series / 5000 Series / **Accessories**

		Article Number
	Rack Mount Kit for S5 Receiver • For mounting one S5.3 or S5.5 receiver in an 1U 19" rack space	ACC-S5RX-MB1
	Rack Mount Kit for S5 Receiver • For mounting two S5.3 or S5.5 receiver side by side in an 1U 19" rack space	ACC-S5RX-MB2
	Rack Mount Bracket • For rack mounting of one WD-4800 unit	MB-15B
	Rack Mounting brackets • For rack mounting of one WT-5800/5805 unit	MB-WT3
	Rack Mounting brackets • For rack mounting of two WT-5800/5805 and/or WT-4820 units	MB-WT4
	Professional Flight Case • 19" Flight Case, 5U	ACC-5U-CASE
	Rack Tray • 1U 1/2 Width Rack Tray for one S4 receiver	ACC-S4.16HWRK
	Rack Tray • 19" Rack tray for two S4 receivers	ACC-S4.16RK

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S4 Series / S5 Series / 5000 Series / **Accessories**

	Article Number
Rechargeable Battery • 2 pcs Ni-MH rechargeable batteries for use with the transmitters and charging stations of the 5000 series	WB-2000-2 Y
Battery Charger • Charging station for the transmitters of the 5000 series • Up to 2 transmitters can be fully recharged in only 3 hours	BC-5000-2
Battery Charger • Charging station for the transmitters of the 5000 series • Up to 6 transmitters can be fully recharged in only 3 hours	BC-5000-6
Battery Charger • Charging station for the transmitters of the 5000 series • Up to 12 transmitters can be fully recharged in only 3 hours	BC-5000-12
AC-Adapter • Power adapter for charging station BC-5000-2 (12 V, 2 A)	AD-5000-2 ER
AC-Adapter • Power adapter for charging stations BC-5000-12/6 (12 V, 5 A)	AD-5000-6 ER
EU-Power Supply • European power supply for S4 and S5 systems	PS-S115-EU

S4 Series / S5 Series / 5000 Series / **Accessories**

	Article Number
Neoprene Aerobic Belt • Suitable for S4 series beltpack transmitters	ACC-AB1000
Leather Pouch • Added protection for you belt pack with this long-lasting protective leather pouch • Fits S5 Belt packs	ACC-S5-Pouch
Belt Pouch • Waist pouch to house a wireless microphone unit • Its elastic belt helps the pouch fit to your waist	WH-4000P
Microphone Windshield • Foam windshield for MIC-X33 and MIC-SJ33, black	ACC-33WS
Microphone Windshield • Foam windshield for MIC-X66-BK/BL/YE and MIC-SJ66-BK/BL/YE, black	ACC-66WS
Microphone Windshield • Foam windshield for MIC-X55 and MIC-SJ55	ACC-5200WS
Microphone Windshield • Foam windshield for MIC-X212-B-R/P-R, MIC-SJ212-B-R/P-R and MIC-X22-B-R/P-R, MIC-SJ22-B-R/P-R, black	ACC-WS-BLK
Microphone Windshield • Foam windshield for MIC-X212-B-R/P-R, MIC-SJ212-B-R/P-R and MIC-X22-B-R/P-R, MIC-SJ22-B-R/P-R, beige	ACC-WS-BGE
Microphone Windshield • Foam windshield for WH-4000H/A • 10 pieces/pack	WH-4000S

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06 WIRELESS SYSTEMS /

Infrared Wireless Classroom System

Reliable infrared voice transmission.

TOA's Infrared Wireless Classroom System incorporates a range of conference and communication enhacing features!

This series 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. The wireless microphones can be used in several adjacent classrooms simultaneously without interferences. The system offers wireless convenience and clear infrared voice transmission that brings classrooms to life.

Amplifier + Receiver +
Wide-dispersion ceiling
speaker IR-820SP

Optional Microphone
IR-310M

IR-300M   IR-200M

IR-802T
(Built-in Preamp)

Features

- Quick & easy installation requiring just one CAT-5 cable
- Stable voice transmission
- Infrared light emission intensity adjustable
- Lightweight, low fatigue infrared wireless microphones
- Uniform classroom-wide sound quality

Accessories

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Applications

- Speech
- Fixed installations
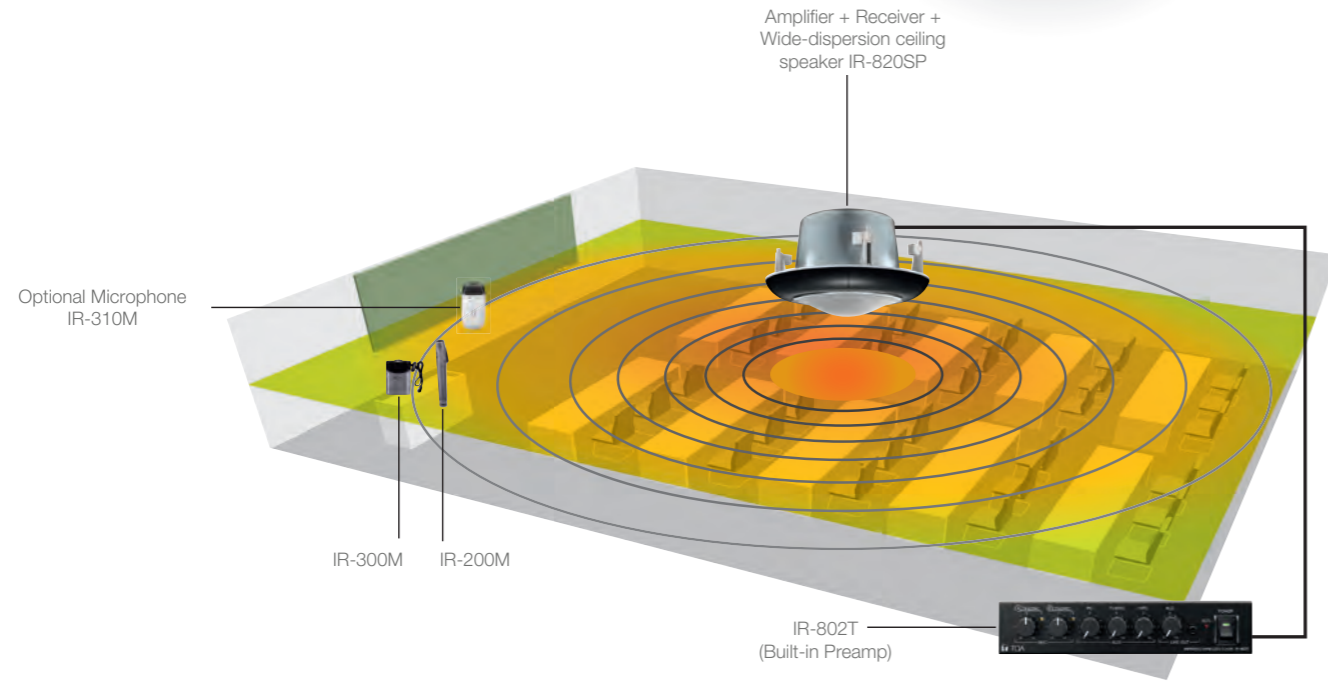
Infrared Wireless Classroom System / Microphone / **IR-200M**

Features

- 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

Options

- IR-200BT-2: Rechargeable Battery
- IR-200BC: Battery Charger

Specifications

	IR-200M
Power Source	2 x IR-200BT-2 rechargeable battery or AA alkaline
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
Microphone Unit	Unidirectional electret condenser microphone
Frequency Response	100 Hz – 12 kHz
Operation Time	Approx. 8 hours (IR-200BT-2, Power selector switch: N) Approx. 6 hours (alkaline battery, Power selector switch: N)
Finish	Control Section: ABS resin, metallic gray, 50 % gloss, paint / Filter Section: Polycarbonate, optical cut filter
Dimensions (ø x H)	37 x 241.8 mm
Weight	170 g (with batteries)

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Infrared Wireless Classroom System / Microphone / **IR-300M**

Features

- 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

Options

- YP-M101: Tie-clip Microphone
- YP-M301: Headset Microphone
- IR-200BT-2: Rechargeable Battery

Specifications

	IR-300M
Power Source	2 x IR-200BT-2 rechargeable battery or AA alkaline
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: -9 dB to 0 dB (factory-preset: 0 dB)
Microphone Unit	Unidirectional electret condenser microphone
Frequency Response	100 Hz – 12 kHz
Input	External microphone input (ø 3.5 monaural mini jack)
Operation Time	Approx. 8 hours (IR-200BT-2, Power selector switch: N) Approx. 6 hours (alkaline battery, Power selector switch: N)
Finish	Control Section: ABS resin, metallic gray, 50% gloss, paint / Filter Section: Polycarbonate, optical cut filter
Dimensions (W x H x D)	64 x 91.3 x 27.3 mm
Weight	130 g (with batteries and strap)

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Infrared Wireless Classroom System / Microphone / **IR-310M**

Features

- 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

Options

- IR-200BT-2: Rechargeable Battery
- IR-310BC: Battery Charger

Specifications

	IR-310M
Power Source	1 x IR-200BT-2 rechargeable battery or AA alkaline
Current Consumption	250 mA (1.2 V)
Infrared Emitter Transmission Distance	Approx.15m (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 (ø 3.5 monaural mini jack)
Operation Time	Approx. 8 hours (one piece of IR-200BT-2)
Finish	Control Section: ABS resin, white / Filter Section: Polycarbonate, optical cut filter
Dimensions (W x H x D)	54 x 109 x 27 mm
Weight	100 g (with battery and strap)

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Infrared Wireless Classroom System / Distributor / **IR-700D**
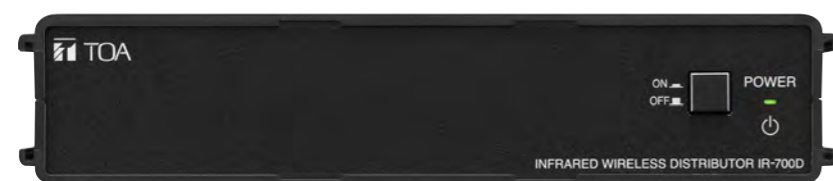
Features

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

Options

- YW-1022: Distributor (1 into 2 outputs)
- YW-1024 Distributor (1 into 4 outputs)
- MB-WT3: Rack Mount Bracket (for rack mounting of one 700D)
- MB-WT4: Rack Mount Bracket (for rack mounting of one 700D with optional IR-702T together)

Specifications

	IR-700D CE
Power Source	AC mains 50 / 60 Hz (supplied from the accessory AC adapter)
Input/Output	4 mixing inputs, 2 distribution outputs
Band-Pass Frequency	3.0 – 6.0 MHz
Gain	0 dB (±3 dB)
Infrared Receiver Input	75 Ω, BNC jack x 4 (Infrared wireless receiver's power source: 24 V DC, max. 800 mA in total of 4 terminals)
Distribution Output	75 Ω, BNC jack
Finish	Case: ABS resin, black
Dimensions (W x H x D)	210 x 44 x 200.9 mm
Weight	640 g (unit only)

Infrared Wireless Classroom System / Tuner / **IR-702T**

Features

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

Options

- MB-WT3: Rack Mounting Bracket (for rack mounting of one IR-702T)
- MB-WT4: Rack Mount Bracket (for rack mounting of one 700D with optional IR-702T together)

Specifications

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

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Infrared Wireless Classroom System / Tuner / **IR-802T**

Features

- Designed for use in the school classrooms assuming that their size is about 10 m x 10 m with simultaneous use in adjacent school classrooms
- Equalizer control knobs for low-, mid- and high-frequency outputs
- Frequency response optimized to reduce acoustic feedback

- 3 AUX inputs for PC, TV/DVD player and MP3 audio player
- Output muting by 25 V speaker line signal from emergency/intercom paging
- Mixing output terminal for ALD (Assistive Listening Device)

Options

- MB-15B-BK: Half-width Blank Panel

Specifications

	IR-802T
Power Source	AC mains 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 dBV, 10 kΩ, unbalanced, stereo mini jack (internal mixing)
	Line, -10 dBV, 10 kΩ, unbalanced, 2P RCA jack (internal mixing)
	Line, -10 dBV, 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 dBV, 10 kΩ, unbalanced, monaural mini jack Speaker: RJ45 (dedicated terminal for IR-820SP connection)
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
Finish	Panel: Aluminum, black / Case: Steel plate, black
Dimensions (W x H x D)	210 x 46 x 312 mm
Weight	1.8 kg

Infrared Wireless Classroom System / Receiver / **IR-500R / IR-510R / IR-520R**

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

Features

- Designed for exclusive use with IR-702T Infrared Wireless Tuner
- Power indicator LED
- IR-510R can be mounted to a ceiling
- IR-500R can be mounted to a wall or an electrical box
- IR-520R can be mounted to a wall or a microphone stand

Specifications

	IR-500R	IR-510R	IR-520R
Power Source	24 V DC (supplied from IR-702T)		
Current Consumption	Max. 40 mA	Max. 60 mA	Max. 30 mA
Infrared Detector			
Wavelength	870 nm		
Carrier Frequency	Channel A: 3,100 MHz / Channel B: 3,350 MHz		
Reception Angle	Vertical: 80° (up to 30° movable downward), Horizontal: 80° (up to 30° movable left or right)		-
Reception Area	Approx. 15 m in a space without any obstacles	Practical range of approx. 8 m* in a space without any obstacle	Approx. 15 m in a space without any obstacles
Connection Terminal	75 Ω, BNC jack		
Dimensions	70 x 120 x 72 mm (W x H x D)	120 x 71.3 mm (ø x D)	84.5 x 63.5 x 32 mm (W x H x D)
Weight	220 g (unit only)	205 g (unit only)	100 g (unit only)

*The practical range may differ from ceiling height.

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Infrared Wireless Classroom System / Ceiling Speaker / **IR-820SP**

Features

- Built-in infrared receiver and 20 W digital amplifier
- Unique wide-dispersion acoustic structure guarantees 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

Specifications

	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
Wavelength	870 nm
Carrier Frequency	Channel A (for teacher) : 3,100 MHz, Channel B (for students) : 3,350 MHz
Reception Angle	360° (horizontal)
Connection Terminal	RJ-45
Connection Cable	CAT-5 UTP
Mounting Hole	ø11.81"
Finish	Enclosure: Steel plate, plating / Baffle: Fire-resistant ABS resin (resin material grade: UL-94 V-0), white Punched net: Steel plate, white / Filter section: Polycarbonate, optical cut filter
Dimensions (ø x D)	320 x 205 mm
Weight	3.4 kg

Infrared Wireless Classroom System / **Accessories**

		Article Number
	Distributor • For 2-branch distribution (1 into 2 outputs)	YW-1022
	Distributor • For 4-branch distribution (1 into 4 outputs)	YW-1024
	Rack Mounting Brackets • For rack mounting of one IR-700D or one IR-702T unit	MB-WT3
	Rack Mounting Brackets • For rack mounting of one IR-700D and one IR-702T together	MB-WT4
	Half-width Blank Panel • Used to mount a one-unit size component that is 210 mm in width in a component rack	MB-15B-BK
	Rechargeable Battery • 2 pcs Ni-MH rechargeable batteries for use with the transmitters and charging stations of the IR series	IR-200BT-2Y
	Battery Charger • Charging station for the transmitters of the IR series. Up to 2 transmitters can be fully recharged in only 3 hours	IR-200BC CE
	Battery Charger • Charging station for one IR-200BT-2. One transmitter can be fully recharged in only 3 hours	IR-310BC
	External Microphone • Tie-clip Microphone for IR-300M, black	YP-M101
	External Microphone • Headset Microphone for IR-300M, black	YP-M301

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Dr.Sound
Academy

'The clearing of throats, heckling, clanking bottles – yet still manage the debate confidently and authoritatively.'

An important speech is only as good as the technology that transmits it, reliably and clearly. During parliamentary debates, multi-lingual meetings, bug-proof company conferences or conference calls – everyone wants to be heard and above all clearly understood. TOA conference systems leave nothing to be desired.

I have a dream!
Yours, Dr Sound

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The Criminal Court building was designed to be orthogonal with the Qasr Al-Hukm axis and consistent with area's urban style. The 44-meter high building gives an awesome feeling and symbolizes its mission, forming a prominent landmark in the lively downtown.

» TOA provided us a flexible system design for smooth conference management. «

High Commission for the Development of Arriyadh
Riyadh, Saudi Arabia

The 46,330 m² Criminal Court Headquarter falls in Qasr Al-Hukm District, downtown of Riyadh, and is part of an integrated program developed by the High Commission for the Development of Arriyadh to revive the historical, administrative and cultural heart of Riyadh.

The building comprises 48 courtrooms, five joint judicial halls, various administrative offices, meeting rooms, and a library. The installation has the latest technologies necessary for accelerating the administrative and judicial procedures. The TOA TS-Series gives us a highly reliable and flexible system and the possibility to combine wired and wireless components. We are extremely satisfied with this solution as it is also easy to use and supports the smooth management of our conferences.

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TS-910 Series

Wired or wireless advanced conference units for system flexibility.

The TS-910 Series permits both infrared wireless and wired connectivity unit to be used in combination. Since wiring to the individual conference units is not a necessity, difficult architectural layouts can easily be overcome, without wiring to the individual units.

With the TS-910 Series conference system you have no worries for radio interference, eavesdropping or information leakage, thanks to wireless systems's IR communication method.

It offers exceptional sound quality, efficient communication for each kind of conference and is, thanks to quick and smart installation without cumbersome cable arrangements, suitable for either permanent or temporary installations.

Features

• Versatile Cat 5 cable connection available for wired units
• System can be controlled by external equipment via RS-232C and USB port
• Failure in one terminal does not affect other units
• Individual control of units possible by assigning individual addresses to each
• Connect a recording device for high quality audio recording of conferences

• Triple choice vote function
• Billingual conference capability
• Built-in feedback supressor for more efficient reduction of acoustic feedback
• When loudspeaker is on, chairman/delegate unit mic is turned off automatically to avoid feedback and vice versa
• Stylish hardware design

Applications

• Hotel banquets
• Multipurpose halls
• Houses of worships
• Board room facilities
• Parlaments
• Meeting rooms

TS-910 Series / Central Unit / **TS-910**

Features

• Safe and secure wirless technology
• Good coverage
• Speeches can be addressed to audience via externally interlinked sound reinforcement system
• Threefold choice vote function for instantaneous voting and including totalisator

• Up to 192 chairman/delegate units per system
• All speeches during the conference can be recorded
• Auto Mic-Off function to prevent inadvertent microphone shutoff failure
• Speaker restriction function

Options

• TK-908A: Flight case for 8 units, 2 transceivers battery charger, batteries and microphones
• TK-906A: Flight case for central unit, 6 units, 1 transceiver, battery charger, batteries and microphones

Specifications

	TS-910
Power Source	100 – 240 V AC, 50 / 60 Hz (use of the supplied AC adapter)
Input	2 x Mic: -60 dBV, 600 Ω, unbalanced 3 x AUX: -20 dBV, 10 kΩ, unbalanced, phone jack
Output	1 x Line: -20 dBV, unbalanced, phone jack 2 x Recording: -20 dBV, 10 kΩ, unbalanced, phone jack/RCA pin jack 1 x Headphone: mini jack
External EQ	Input: -20 dBV, 10 kΩ, RCA pin jack Output: -20 dBV, 10 kΩ, RCA pin jack
No. of connectable Chairman/delegate Units	192
External control terminal	RS-232, D-sub connector (9 pins, male) / USB-B selectable
Function Switch	Speaker restriction: set to 1, 2, 3 and 4 Mic-off function: off or on (selectable) Speech priority selector A/B/C A: First-in-first-out, B: Last-in-first-out, C: Fixed for the first unit and last-in-last-out for the subsequent units FBS selection : External/Off/Auto/Manual
Applicable units	TS-901/902/911/912, TS-801/802
Dimensions (W x H x D)	359 x 118.8 x 179.8 mm
Weight	2.8 kg

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TS-910 Series / Chairman's & Delegate's Unit / **TS-911 / TS-811 / TS-912 / TS-812**

TS-911 Chairman's unit

TS-912 Delegate's unit

TS-811 Chairman's unit

TS-812 Delegate's unit

TS-911 / TS-811 / TS-912 / TS-812

- Compact and lightweight
- Equipped with removable microphone, loud-speaker and priority switch
- Chairman unit features a priority speech key
- Channel selector for conference language
- When the loudspeaker is on, the microphone is automatically turned off to avoid feedback and vice versa
- 1 recording output
- Ring shaped in-use LED indicator
- Multiple chairman's units can be operated simultaneously
- Easy hook-up
- TS-911 / TS-912: 3 voting keys

Options

- TS-903: Microphone, standard length
- TS-904: Microphone, long
- TS-918: Expansion Unit
- TS-919: Bridge Unit

Specifications

	TS-911	**TS-811**	**TS-912**	**TS-812**
Power source	24V DC (supplied from the optional TS-918 Expansion Unit)			
Input	Microphone terminal: XLR-4-31 type			
Output	Monitor speaker: 8 Ω, 0,2 W / Headphone: Mini jack x 2			
Connection Terminal	RJ45 Connector			
Function	Monitor speaker volume Headphone volume Priority speech function Monitor selector switch Voting function buttons	Monitor speaker volume Headphone volume Priority speech function Monitor selector switch	Monitor speaker volume Headphone volume Monitor selector switch Voting function buttons	Monitor speaker volume Headphone volume Monitor selector switch
Finish	Top panel: ABS resin, gray metallic, paint, semi-gloss			
Dimensions (W x H x D)	210 x 68.6 x 152 mm			
Weight	570 g			

TS-910 Series / Expansion Unit & Bridge Unit / **TS-918 & TS-919**

TS-919B1 Bridge Unit

TS-918 Expansion Unit

TS-919B4 Bridge Unit

TS-918

- Interface for incorporating the wired conference unit(s) into the conference system
- Can be mounted in an EIA Standard equipment rack (1 unit size)
- Auto Mic-Off function to prevent inadvertent microphone shutoff failure
- Speaker restriction function
- Speeches can be addressed to audience via externally interlinked sound reinforcement system

TS-919

- Bridge units for connecting single wired conference unit of the TS-911 or TS-912 types
- Connected to the conference unit by means of CAT5 Cable

Options

- MB-15B-BK: Rack Mounting Bracket for one TS-918 unit
- MB-15B-J: Rack Mounting Bracket for two TS-918 units

Specifications

	TS-918	**TS-919B1**	**TS-919B4**
Power Source	100 – 240 V AC, 50/60 Hz (use of the supplied AC Adapter)	24 V DC (supplied from the optional TS-918 Expansion Unit)	
Power Consumption	74.4 W	-	
Current Consumption	Max. 3.1 A DC (when 24 V DC is supplied from the accessory AC Adapter)	Max. 16 mA	Max. 26 mA
Gain	Upstream: +16.5 dB / Downstream: +12.5 dB	-	-
Branching loss	-	Upstream: 16.5 dBV / Downstream: 16 dB	Upstream: 17.5 dBV / Downstream: 16.5 dB
Insertion loss	-	Upstream: 1 dBV / Downstream: 0.5 dB	Upstream: 3 dBV / Downstream: 2 dB
Connection terminal	Central unit connection terminal: BNC jack; Bridge unit connection terminal: RJ45 connector	Communication cable connection terminal: RJ45 connector × 2 Conference unit connection terminal: RJ45 connector	Communication cable connection terminal: RJ45 connector × 2 Conference unit connection terminal: RJ45 connector × 4
LED Indicator	Connection status indicators (3 LEDs each on the front and rear panels), Power indicator	Connection status indicator	Connection status indicator x 4
No. of connectable Chairman/Delegate Units	Up to 24 units (when using 21 units of TS-919B1 or 6 units of TS-919B4	1 unit	4 units
Finish	Panel: Aluminum, black, 30 % gloss, melamine-baked paint / Case: Pre-coated steel plate, black	ABS resin, black	
Dimensions (W x H x D)	210 × 44 × 296.5 mm	68 × 60.3 × 24 mm	176.2 × 75 × 29.8 mm
Weight	1.6 kg	40 g	160 g

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TS-900 Series / Chairman's & Delegate's Unit / **TS-901 / TS-902**

TS-901 Chairman's unit

TS-902 Delegate's unit

Features

• Infrared transmission
• Attractive unit equipped with removable microphone, loudspeaker and priority switch
• Two different versions for Chairman (TS-901) and Delegate (TS-902)
• 3 voting keys
• Channel selector for conference language
• When the loudspeaker is on, the microphone of the unit is automatically turned off to avoid feedback and vice versa

• 1 recording output
• Ring shaped in-use LED indicator
• Multiple chairman's units can be operated simultaneously
• TS-901: Pressing the priority switch activates the chime and overrides delegate's units
• Easy hook-up

Options

• TS-903: Microphone, standard length
• TS-904: Microphone, long
• TS-905/TS-907: Infrared Transceiver
• AD-0910: AC Adapter
• BP-900: Lithium Ion Battery

Specifications

	TS-901	TS-902
Power source	7.4 V DC (battery) or 9 V DC (AD-0910 AC adapter)	
Input	Microphone terminal: XLR-4-31 type	
Output	Monitor speaker: 8 Ω, 0,2 W; Headphone: Mini jack x 2	
Battery Life	Approx. 10 hrs	
Function	Monitor speaker volume Headphone volume Priority speech function Voting function Monitor selector switch	Monitor speaker volume Headphone volume Voting function Monitor selector switch
Dimensions (W x H x D)	210 x 65.9 x 152 mm	
Weight	640 g	

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TS-900 Series / Infrared Transceiver / **TS-905 / TS-907**

Features

• Infrared Transmitter/Receiver
• Cordless, easy to install and remove
• Communication between units performed by means of infrared signals
• Variety of mounting methods: ceiling, wall and microphone stand
• TS-907: designed for high ceiling applications

Specifications

	TS-905	TS-907
Power Source	24 V DC (supplied from the Central unit)	
Current Consumption	Max. 150 mA	Max. 180 mA
Wavelength	870 nm (AM: Brightness modulation)	
Modulation Method	Frequency modulation	
Reception & Emission Angle	Vertical: 150˚ (75˚ + 75˚) Horizontal: 360˚	Vertical: 90˚ (45˚ + 45˚) Horizontal: 360˚
Communication Area	Approx. 6 – 7 m in radius from the point underneath the unit (Ceiling height: 2.5 – 4.5 m)	Approx. 6 m 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 (ø x H)	120 x 71.3 mm	
Weight	230 g (unit only)	

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07 CONFERENCE SYSTEMS /

TS-800 Series

Advanced conference system with easy cable-free installation.

The TS-800 Series is a cordless infrared conference system that can be installed and removed quickly and easily. Since the TS-801 Chairman Unit and the TS-802 Delegate Unit require no wiring, they permit easy installation based on an unrestricted layout. The Infrared Transmitter/Receiver Unit and recording equipment are connected to the TS-800 Central Unit, and the system function settings and status indications are performed at the Central Unit. The TS-800 Series is ideal for conferences and meetings in corporate, educational and hotel applications.

- Good coverage
- Exceptional sound quality
- Flexible and easy configuration in different rooms and with varied participant numbers
- Secure, wireless infrared communication assures freedom from eavesdropping and interference
- Easy to set-up and operate

Features

- Suitable for either permanent or temporary installation
- No worries about radio interference, eavesdropping, or information leakage thanks to IR communication method
- System can be controlled by external equipment via RS-232C

- Individual control of units possible by assigning individual unit addresses
- Connect a recording device for high quality audio recording of conferences
- When loudspeaker is on, chairman/delegate unit mic is turned off automatically to avoid feedback and vice versa

Applications

- Hotel banquets
- Multipurpose halls
- Houses of worships
- Board room facilities
- Parlaments
- Meeting rooms

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TS-800 Series / Central Unit / **TS-800**

Features

- Efficient communication for each kind of conference
- Safe and secure wireless technology
- Up to 64 active units per system - TS-801 Chairman and TS-802 Delegate Units
- Four ports for model TS-905/TS-907 infrared transceivers

- AUX and MIC inputs
- Headphone output
- Up to four simultaneous speakers (chairmen / delegates)

Options

- MB-TS900: Rack Mounting Bracket

Specifications

	TS-800
Power Source	100 – 240 V AC, 50/60 Hz (use of the supplied AC adapter)
Input	1 x Mic: -60 dBV, 600 Ω, unbalanced, phone jack 1 x AUX: -20 dBV, 10 kΩ, unbalanced, phone jack
Output	2 x Recording: -20 dBV, 10 kΩ, unbalanced, phone jack/RCA pin jack 1 x Headphone: mini jack
No. of connectable Chairman/delegate Units	64
External control terminal	RS-232C, D-sub connector (9 pins, male)
Function Switch	Speaker restriction: set to 1, 2, 3 and 4 Mic-off function: off or on (selectable) Speech priority selector A/B/C A: First-in-first-out, B: Last-in-first-out, C: Fixed for the first unit and last-in-last-out for the subsequent units
Applicable unit	TS-801/802
Dimensions (W x H x D)	359 x 118.8 x 179.8 mm
Weight	2.7 kg

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TS-800 Series / Chairman's & Delegate's Unit / **TS-801 / TS-802**

TS-801 Chairman's Unit

TS-802 Delegate's Unit

Features

- Infrared transmission
- Compact and lightweight
- Unit equipped with removable microphone, loudspeaker and priority switch
- 2 different version for chairman (TS-801) and delegates (TS-802)
- When the loudspeaker is on, the microphone of the unit is automatically turned off to avoid feedback and vice versa

- 1 recording output
- Ring shaped in-use LED
- Multiple chairman units can be operated simultaneously
- TS-801: Pressing the priority switch activates the chime and overrides delegate's units
- Easy hook-up

Options

- TS-903: Microphone, standard length
- TS-904: Microphone, long
- AD-0910: AC Adapter
- BP-900: Lithium-Ion Battery

Specifications

	TS-801	TS-802
Power source	7.4 V DC (battery), 9 V DC (AC Adapter) (supplied from optional BP-900 Battery or AD-0910 AC Adapter)	
Input	Microphone terminal: Combined type of XLR-4-31 (dedicated for connecting the optional TS-903 or TS-904)	
Output	Monitor speaker: 8 Ω, 0,2 W / Headphone: Mini jack x 2	
Battery Life	Approx. 10 hours (when the fully-charged BP-900 battery is used with „During Speech" to „Standby" ratio of 1:2)	
Connection Terminal	RJ45 Connector	
LED indicator	Speech indicator (flashes when the unit is out of communication range), Power indicator (flashes when the unit is out of communication range or when the battery level is low)	
Dimensions (W x H x D)	210 x 68.6 x 152 mm	
Weight	630 g	

System Examples

TS-910

- Microphone
- PC or external control device
- Recording device
- Public Address System

Central Unit TS-910

Wireless version

Distributor YW-1024 / YW-1022

Infrared Transmitter / Receiver TS-905 or TS-907

Microphone TS-903 or TS-904

Infrared Chairman unit TS-901   Infrared Delegate unit TS-902

Bridge unit TS-919B4

Wired version (CAT5)

1....4

Bridge unit TS-919B1

Expansion unit TS-919

Wired Delegate unit TS-912   Wired Chairman unit TS-911

TS-800

- Microphone
- PC or external control device
- Recording device

Central Unit TS-800

Distributor YW-1024 / YW-1022

Infrared Transmitter / Receiver TS-905 or TS-907

Distributor YW-1024 / YW-1022

Note: The maximum number of Infrared Transmitter/Receiver units to be installed
TS-905: 16
TS-907: 12

Microphone TS-903 or TS-904

Chairman unit TS-801   Delegate unit TS-802

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TS-770 Series

Simple & compact wired conference system.

The TS-770 Series is a compact wired conference system with a capacity of up to 210 units. Remote participation via phone or internet is possible. Clear sound, easy set up and convenient storage are self-evident. The system can be installed by merely connecting conference units to the TS-770 Central Unit. The use of the Remote Delegate Interface Unit permits a party in remote location to participate in the conference.

The TS-770 is very easy to install and store. Use of its line connection terminals permits connections to the conference units of TS-771, TS-772, and TS-775, making up a conference system. Up to 3 Central Units can be connected, accommodating a total of 210 units.

• Plug-and-play system
• Easy to set-up and operate

System Example

Central Unit
TS-770

Chairman unit
TS-771

Delegate unit
TS-772

Remote Delegate
Interface unit TS-775

Telephone handset

PABX
C/O

Telephone handset

PC

Internet

PC
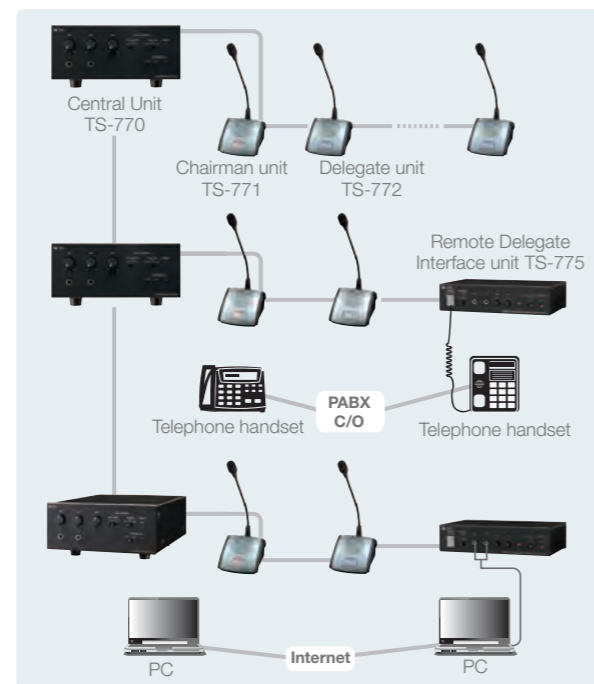
Features

• Conference speech can be amplified by simply connecting the Chairman and Delegate Units to the Central Unit
• Connecting the Remote Delegate Interface unit to the system allows conferences to be held between remote locations via telephone lines or PCs
• Up to 3 Central Units and up to 210 conference Units can be connected per system
• Up to 70 Conference Units can be connected per Central Unit (35 units per line x 2 lines)

• The number of simultaneously operable Delegate Units can be limited using the Speaker Restriction function (Can be set to 0, 1, 3 or 6 units)
• Even if the speaker forgets to turn off his or her microphone after speech completion, the Mic-Off function automatically switches off the microphone after a preset interval elapses (can be set to OFF, 20 or 40 seconds)
• Conference conversations can be recorded using recording equipment

Applications

• Hotel banquets
• Multipurpose halls
• Houses of worships
• Board room facilities
• Parlaments
• Meeting rooms

TS-770 Series / Central Unit / **TS-770**

Features

• Good coverage
• Up to 70 units can be attached
• System expandable to 210 units by connection of 3 Central Units
• Connect a recording device for high-quality audio recording of conferences

• Test function allows connections to be accurately verified
• Remote Interface Unit facilitates conference calls
• Features microphone volume control, AUX volume control and line volume control
• Speaker restriction function

Options

• YR-770-2M: Extension Cord, 2 m
• YR-770-10M: Extension Cord, 10 m

Specifications

	TS-770
Power Source	230 V AC, 50/60 Hz
Power Consumption	Max. 60 W
Rated Output	35 V DC, 650 mA × 2
Input	MIC: -60 dBV, 600 Ω, unbalanced, phone jack AUX: -20 dBV, 10 kΩ, unbalanced, phone jack
Output	Recording: -20 dBV, 10 kΩ, unbalanced, phone jack, pin jack × 2
Equalizer Insertion Input Terminal	Input: -20 dBV, 10 kΩ, pin jack Output: -20 dBV, 10 kΩ, pin jack
Expansion Input and Output Terminal	Input: -20 dBV, 10 kΩ, pin jack × 2 Output: -20 dBV, 10 kΩ, pin jack × 2 Control: 10 kΩ or more, voltage output, pin jack × 2
Finish	Panel: Aluminum, hairline, black / Case: Pre-coated steel plate, black, 30 % gloss
Dimensions (W x H x D)	210 × 107.1 × 316 mm
Weight	4 kg

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TS-770 Series / Chairman's & Delegate's Unit / **TS-771 / TS-772**

TS-771 Chairman's Unit

TS-772 Delegate's Unit

Features

- Built-in speaker
- A ring-shaped LED on the optional microphone indicates that the microphone is on
- To prevent howling, the built-in speaker is turned off while the microphone is on
- Press-to-talk priority speech button activates chime and overrides Delegate's Unit (TS-771)

- Press-to-talk button
- Recording output mini-jack for connection to a recording device
- Multiple chairman units operating simultaneously
- Long or short gooseneck microphone (optional)
- 8P quick-lock type mini-DIN socket

Options

- TS-773: Microphone, standard length
- TS-774: Microphone, long

Specifications

	TS-771	TS-772
Power source	35 V DC, under 30 mA supplied from central unit	
Output	Internal speaker: 130 Ω, 200 mW Contact output: 24 V DC, max. 50 mA	
Control	Speech button, priority button, chime button	Speech button
Finish	Case: ABS resin, black / Panel: ABS resin, gray metallic, semi-gloss, paint	
Dimensions (W x H x D)	114.5 x 78.4 x 152.9 mm	
Weight	780 g	

TS-770 Series / Remote Delegate Interface Unit / **TS-775**

Features

- Audio Input/Output for local PC connection to a remote PC participant
- PC to PC call connection over network uses third party software/service not provided by TOA
- RJ-11 connection provided to connect with handset connector on telephone base unit for calls connected to a remote telephone participant

- Speech Mode (Selectable): Auto: VOX (Voice Activated Switch) or Manual: Talk Key On-Off switching function
- Contact closure output when microphone is active - can be used for camera call-up or other devices

Options

- TK-776: Flight Case for 1 central unit, 8 units and the cables
- TK-778: Flight Case for 12 units and the cables

Specifications

	TS-775
Power Requirements	35 V DC (supplied from optional central unit)
Current Consumption	< 30 mA
Input	-60 dBV, 200 Ω; balanced; mini phone jack with VR control
Output	-60 dBV, 22 Ω; balanced; mini phone jack with VR control
Speech method	Auto: Voice-activated automatic switching, Manual: Talk-key activated
Finish	Pre-coated steel plate, black
Dimensions (W x H x D)	160 x 41.8 x 100 mm
Weight	700 g

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TS-780 Series

Plug-and-play system with built-in MP3 recorder for quick conference recording.

The TS-780 Series conference system with compact and leightweight units is designed for quick and easy installation and storage. The system can be installed by merely connecting Conference Units to the Central Unit. It is expandable to 192 Units by connecting of 3 Central Units.

The Central Unit is equipped with a MP3 recorder that permits conference contents to be recorded on a SD card.

System example

Central Unit TS-780   Chairman Unit TS-781   Delegate Unit TS-782

Central Unit TS-780   Delegate Unit TS-782

Central Unit TS-780   Delegate Unit TS-782
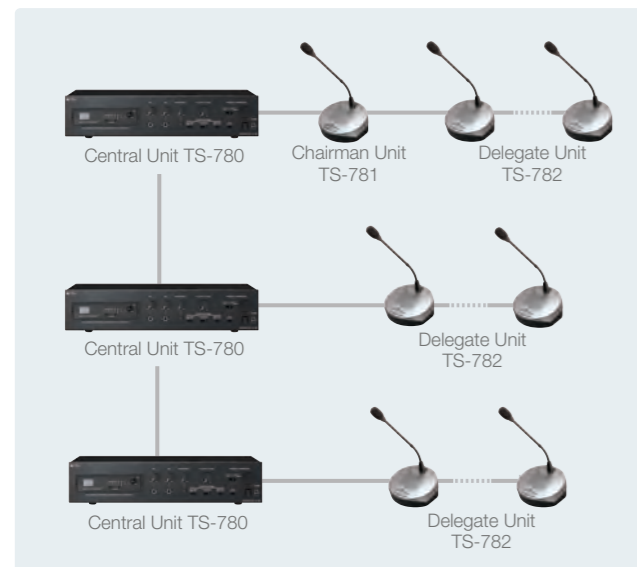
Features

- Plug-and-play system
- Up to 64 units can be attached to a single Central Unit
- System expandable to 192 units by connection of 3 Central Units
- Test function allows connections to be accurately verified
- Conferences can be recorded onto SD card or external recording device
- Built-in feedback suppressor for more efficient reduction of acoustic feedback
- External equalizing capability
- Compact and stable hardware design

Applications

- Hotel banquets
- Multipurpose halls
- Houses of worships
- Board room facilities
- Parlaments
- Meeting rooms

TS-780 Series / Central Unit / TS-780

Features

- Connection to the conference units by use of its line connection terminals
- System expandable to 192 units by connection of 3 Central Units
- Equipped with a MP3 recorder that permits conference contents to be recorded on a SD card
- Can be mounted in an EIA Standard equipment rack

Options

- MB-23B-BK: Rack Mounting Bracket
- YR-780-2M: Extension Cord, 2 m
- YR-780-10M: Extension Cord, 10 m

Specifications

	TS-780
Power Source	230 V AC, 50/60 Hz
Power Consumption	60 W
Rated Output	36 V DC, 650 mA × 2
Input	MIC: -60 dBV, 600 Ω, unbalanced, phone jack AUX: -20 dBV, 10 kΩ, unbalanced, phone jack
Output	Recording: -20 dBV, 10 kΩ, unbalanced, phone jack, pin jack × 2
Equalizer Insertion Input Terminal	Input: 0 dBV, 10 kΩ, pin jack Output: 0 dBV, 10 kΩ, pin jack
Expansion Input and Output Terminal	Input: 0 dBV, 10 kΩ, unbalanced, pin jack × 2 Output: 0 dBV, 10 kΩ, unbalanced, pin jack × 2 Control: 10 kΩ or more, voltage output, pin jack × 2
Finish	Panel: Aluminum, black, 30 % gloss / Case: Steel plate, black, 30 % gloss
Dimensions (W x H x D)	420 × 96.1 × 226.2 mm
Weight	3 kg

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TS-780 Series / Chairman's & Delegate's Unit / **TS-781 / TS-782**

TS-781 Chairman's Unit

TS-782 Delegate's Unit

Features

- Compact and lightweight design
- Easy to install and store
- Speech button in the ON position: allows a chairman to speak and disabled the speaker to prevent feedback
- Speech button in the OFF position: the microphone cannot be used but the speaker is turned on, allowing the voices from delegates units to be monitored
- Chairman Unit with priority button

Options

- TS-773: Microphone, standard length
- TS-774: Microphone, long

Specifications

	TS-781	TS-782
Power source	36 V DC, under 30 mA supplied from central unit	
Output	Internal speaker: 130 Ω, 200 mW Headphones / Recording: 32 Ω (headphone) / 10 kΩ, -20 dBV (recording), unbalanced, mini jack x 2	
Control	Speech button, priority button	Speech button
Finish	Upper case: ABS resin, silver metalic, paint / Lower case: ABS resin, black	
Dimensions (W x H x D)	145.3 x 70.7 x 150.5 mm	
Weight	800 g	

TS-Series Accessories

		Article Number	for TS-770 series	for TS-780 series	for TS-800 series	for TS-910 series
	AC Adapter • Finish: PC/ABS alloy, black • Weight: 190 g	AD-0910	•	•	•	•
	Battery Charger • Dedicated battery charger for the BP-900 • Permits up to 8 batteries to be simultaneously charged within up to 5 hours • Finish: Steel, black, paint • Weight: 1.2 kg	BC-900	–	–	•	•
	Lithium-Ion Battery • Nominal Voltage: 7.4 VDC • Weight: 95 g	BP-900	–	–	•	•
	Rack Mounting Bracket	MB-TS900	–	–	•	•
		MB-25B-BK	–	–	–	•
		MB-25B-J	–	–	–	•
		MB-23B-BK	–	•	–	–
	Extension Cables • For connection of TS-770 expansion amplifier or the connection of two conference units • 8 pin DIN socket/DIN plug • 2 m (YR-770-2M) or 10 m (YR-770-10M)	YR-770-10M	•	–	–	–
		YR-770-2M	•	–	–	–
		YR-780-10M	–	•	–	–
		YR-780-2M	–	•	–	–
	Antenna Distributor • YW-1022 Y (1 in 2 out) • YW-1024 Y (1 in 4 out)	YW-1022	–	–	•	•
		YW-1024	–	–	•	•
	Microphone, standard • For Chairman's & Delegate's Unit • Length: 368 mm • Weight: 90 g	TS-773	•	•	–	–
		TS-903	–	–	•	•
	Microphone, long • For Chairman's & Delegate's Unit • Length: 518 mm • Weight: 110 g	TS-774	•	•	–	–
		TS-904	–	–	•	•
	Flight Cases • Designed to carry 1 x central unit and 8 x conference units and the cables	TK-776	•	–	–	–
	• Designed to carry 12 units and the cables	TK-778	•	–	–	–
	• Designed to carry central unit, 6 units, 1 transceiver, battery charger, batteries and microphones	TK-906A	–	–	•	•
	• Designed to carry 8 units, 2 transceivers, battery charger, batteries and microphones	TK-908A	–	–	•	•

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SO UND CHECK

Dr. Sound

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'It sounds good.'

Here at TOA we are your partner for all acoustic principles, measuring units, formulas, and for the successful planning of PA systems.

The following pages provide an introduction to electroacoustics. Please contact us should you have any questions.

Yours, Dr. Sound

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SOUND**CHECK**

Principles of electroacoustics

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 number of aspects that need to be taken into account 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.

Principles of electroacoustics

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, and 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.

indirect sound
direct sound
listening position
sound source
indirect sound
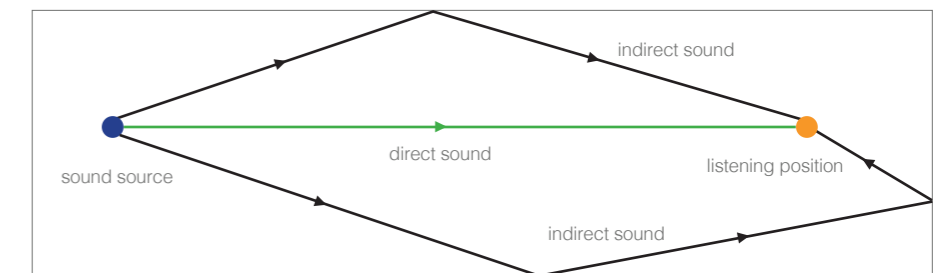
Direct and indirect sound, ambient noise

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 European standards applicable in many countries, EN 60849 (to be replaced by EN 50849) or TS 54-32, the minimum value prescribed for electroacoustic emergency notification systems is an STI of 0.5.

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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 systems according to TS 54-24 must be certified according to the EN 54-24 product standard (see p. 336).

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

100-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, 100-volt loudspeakers draw the power to which they have been adjusted from an amplifier. This makes it possible to connect 100-volt loudspeakers to a 100-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.
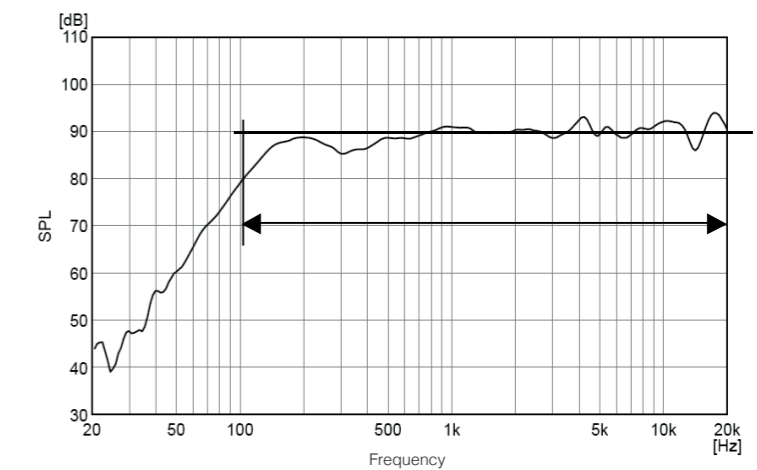
Figure: Frequency response of a loudspeaker

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.

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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 deci-bel, i.e. a decibel. These are power ratios. For sound pressures, voltages and currents, the factor is 20.

Power ratio in dB: $10 \times \log_{10}$ **(power/reference power) or** $10 \times \log_{10}$ **(P/P_0)** sound pressure, voltage or current ratios in dB: $20 \times \log_{10}$ **(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. $p_1 = p_n + 10 \times \log(P)$

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

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.

> With each doubling in distance, the sound pressure level drops by 6 dBSPL.

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:

$p = p_1 - 20 \times \log (d)$

p: Sound pressure level at a defined 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
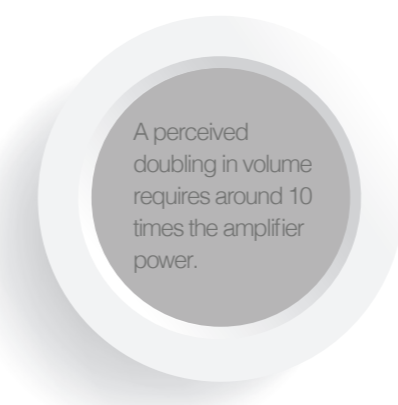
The formulas for sound pressure at a defined power and at a defined distance are combined. The sound pressure level at a given power and distance is calculated as follows:

$$p = p_n + 10 \times \log(P) - 20 \times \log (d)$$

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)

> A perceived doubling in volume requires around 10 times the amplifier power.

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

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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: $T = d / 340 + 0.01\,s$

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 decentralised 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.

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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:
$$Z = Z_1 + Z_2 + \cdots$$

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 realised 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

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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 VAS using the example of a supermarket

The procedure for planning a VAS 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 EN 60849 (EN 50849) 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 EN 54-24 speaker: PE-154EN

- 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 and complying with EN 60849 (EN 50849) or TS 54-32.
  Choice of EN 54-24 speaker: PC-245AB-EB

- 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 EN 54-24 speaker: CS-154EN

- Catering / WC:
  The acoustic ceiling allows an easy installation of ceiling speakers.
  Choice of EN 54-24 speaker: PC-2369EN

- Technical rooms:
  Typically the ambient noise in technical rooms can be high. Therefore a reflex horn speaker is a good solution.
  Choice of EN 54-24 speaker: SC-615BS

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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 iterative process of change and resimulation leads to an optimum result.

An important value for the speech inteligiblity calculation is the reverberation time. In the supermarket example it is 1.5 s in the sales area.

Distribution of the loudspeakers
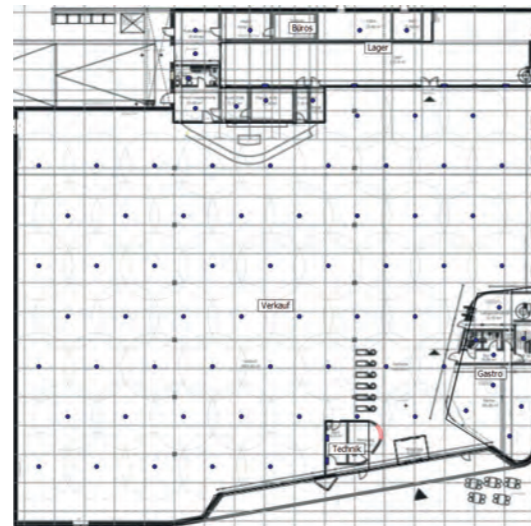
Distribution of the overall SPL in the sales area
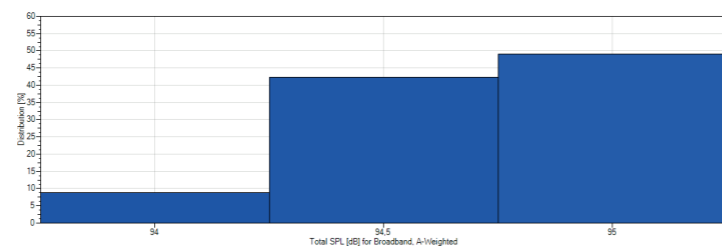
Average 94.4 dBA

Planning example: supermarket

Speech intelligibility in the sales area
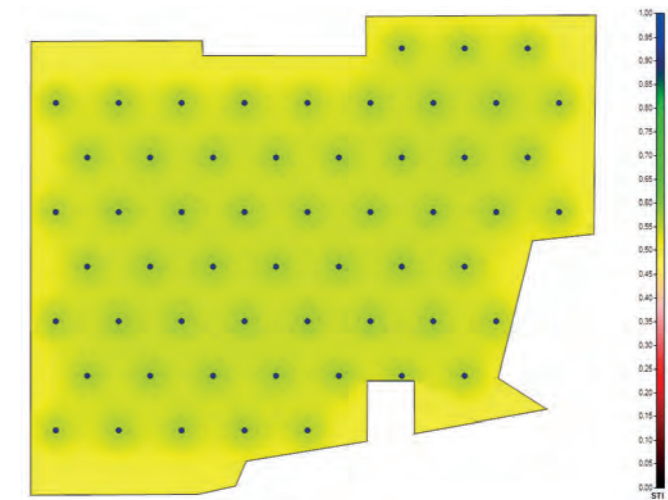
Distribution of speech intelligibility
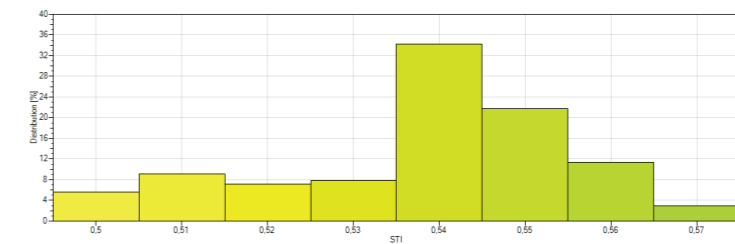
Average STI 0.56 / STI 0.52 (minus standard deviation)

Final result after simulation

	EN 54-24 loudspeakers					
	Quantity	Model	Height	Tapping	Total db SPL (A-weighted)	Total load
Sales area 1	28	PE-154EN	4.5 m	10 W	94	280 W
Sales area 2	28	PE-154EN	4.5 m	10 W	94	280 W
Adjoining rooms	11	PC-245AB-EB	3 m	2 x 3 W	88	66 W
Warehouse	4	CS-154EN	2.5 m	10 W	97	40 W
Catering / WC	10	PC-2369EN	3 m	3 W	95	30 W
Technical rooms	2	SC-615BS	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 fulfilled 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-660D
• Integrated voice storage function for automatic and manual voice alarm as well as integrated emergency microphone on VM-3360VA

Using System Manager VM-3360VA and Expansion Amplifier VM-3360E enables 6 A/B loudspeaker circuits with an adequate total amplifier power of 720 watts.

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Voice alarm systems

Objectives and use

Alarm systems that rely on spoken messages to warn and direct people are either referred to as electroacoustic emergency notification systems or voice alarm systems, depending on the applicable standard. Below, we use the term voice alarm for both types, provided that there are no differences between them.

The objective of voice alarm is to inform people in emergency situations using voice messages, thereby inducing them to leave a dangerous area quickly and in an orderly fashion. Voice alarm can also be used to initiate operational measures for the protection of property. The fire brigade can use such a system to issue clear instructions for targeted building evacuation. Such instructions are directed in particular to any external people present in these buildings.

Regulation and Standardisation

There exist different kinds of standards and regulations affecting voice alarm systems (VAS). Here we will mainly cover that standards and regulation that were originated from EU standardisations and are applied in several EU member states. There can exist further national standards covering parts of installations that are not covered by EU standards, e.g. for the fire resistance of cables. Furthermore there can exist national laws and regulations for constructions relating to fire. We cannot cover all national laws, regulations and standards here due to limited space.

Construction Product Directive and Regulation

Beneath other construction products, the construction product directive (CPD) covered the general requirements for fire equipment. This directive was adopted by most EU member states resulting that three product standards of the EN 54 series became mandatory for VAS' in those states in 2010. The construction product regulation entered into force end of March 2011. The transition period, i.e. the time of overlapping of the directive and regulation, ended on 1st July 2013. The EU construction product regulation stands over national directives or regulations and is now mandatory in all EU member states.

The directive and the regulation, both require a certification of VAS equipment including power supplies, electronic control system (VACIE: voice alarm and indication equipment) and loudspeakers. Products certified under the CPD can still be used without any modification under the new CPR. But, under the CPR, the name of the certificate changed from "EC-Certificate of Conformity" to "Certificate of constancy of performance", and the manufacturer has to provide a so called declaration of performance (DoP), declaring the performance of the product with regard to the essential requirements listed in the product standards.

The CPR has no influence on national application or installation standards. It affects the product only and is therefore a matter of the manufacturer.

Product Standards

The equipment of a VAS (meaning electronic control system VACIE, power supplies and loudspeakers) is to be tested and certified by a notified body (NB) on the following standards by the manufacturer:

• electronic system ("VACIE"): EN 54-16
• power supply (PSE): EN 54-4
• loudspeaker: EN 54-24

We provide a wide range of certified voice alarm equipment, from electronic systems (VACIEs) including power supplies up to loudspeakers.

Voice alarm systems

EU Application Standards

Two EU standards are applied in several EU member states:

• EN 60849 (will be replaced by EN 50849 soon) and
• TS 54-32

The EN 60849 is also called a system standard because it does not cover the application only but also the products. Since there were some discrepancies between this standard and the EN 54 standards, it was revised and will be published soon under the standard name EN 50849.

The TS 54-32 belongs to the EN 54 series but it is not a harmonised standard, therefore it is a technical specification. It was already adopted by some EU member states. It covers the planning, design, installation, commissioning, use and maintenance of voice alarm systems with specific requirements.

Both standards have similar requirements but not only for

• the power supply system: AC-mains and batteries
• power backup: 30 minutes alarm, 24 hours standby
• emergency messages: with 4 - 10 seconds attention drawing signal before message
• emergency speech levels: min. 65 dB, min. 6 dB above ambient noise, max. 120 dB
• intelligibility: STI equal or better than 0.5

The following table shows a comparison of both standards

Covered item	EN 60849 (EN 50849)	TS 54-32
General	general description of requirements and functions, maintenance, only responsibility for running system	detailed descriptions, also covering the entire process of planning up to the last approval, maintenance, detailed responsibilities
VAS concept, planning and design	-	considerations for making a concept for the VAS, risk-assessment, locations of components and cables, protections etc.
Installation	IEC 60364 or national standards	Mounting, interconnecting and testing the equipment and cables, or national standards
Commissioning, verification, third party approval, acceptance	-	Commissioning etc. by whom, training of operators
Product requirements	general description, partly similar with EN 54-16	refers to EN 54-4/-16/-24
Intelligibility measurement	several methods but mainly description for STI, application rules (no. of measurements etc.)	STI and STIPA, application rules (no. of measurements etc.)

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