

Panasonic
ideas for life

Mixing Power Amplifiers
WA-MA120N
WA-MA240N



Power Amplifier & Mixer Integrated System

P A M I S

All-in-One Mixer and Amp

From the simplest to the most complex public address needs, the WA-MA120N and WA-MA240N have what it takes. These mixing power amplifiers combine multiple inputs with assigned priorities and call signs to provide the flexibility required for applications ranging from schools and business facilities, factory, office and religious buildings. To ensure more efficient and reliable communication, options including program broadcasting and troubleshooting.



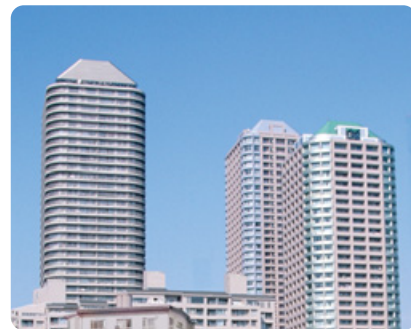
This handy system is ideal for public announcements in all sorts of facilities.



at schools



at Public facilities



at Residential neighborhoods



at Department stores



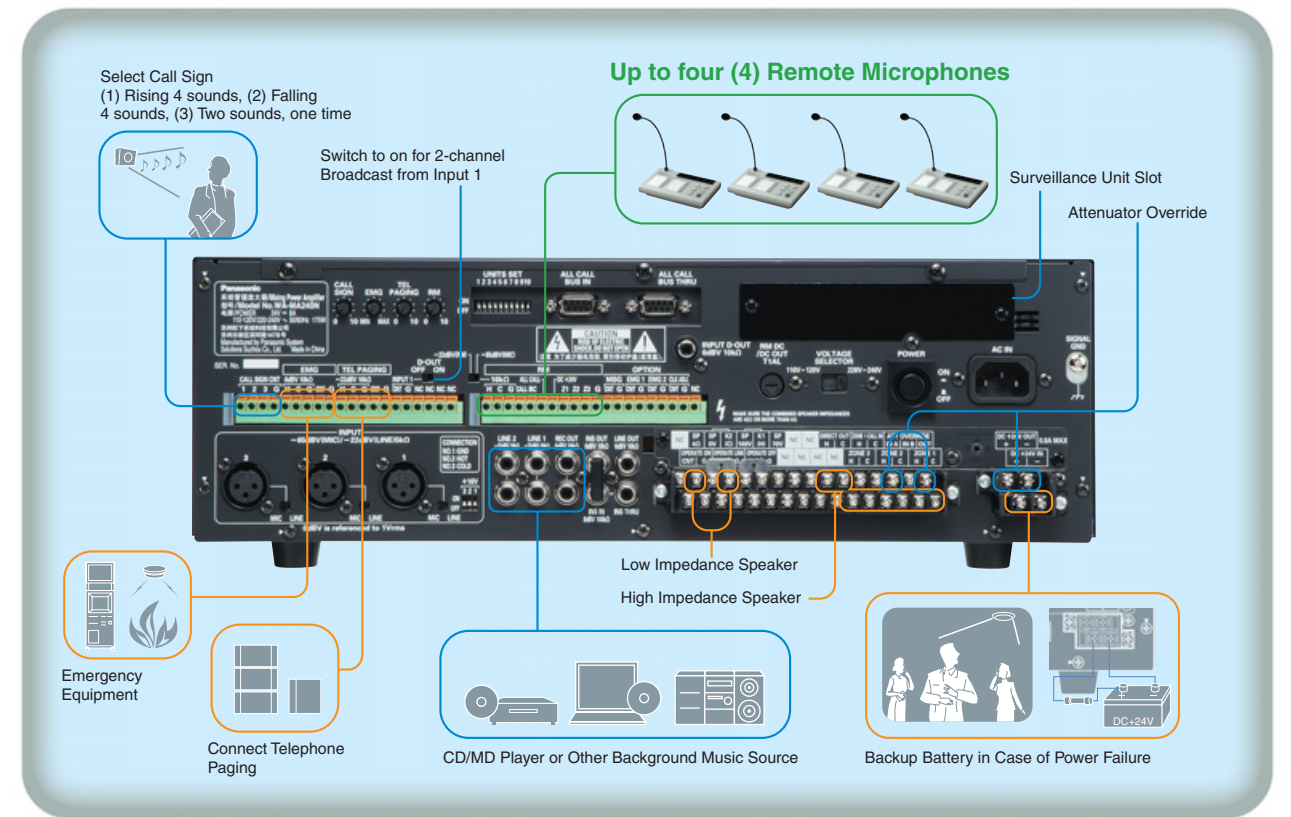
at Ski resorts



at Museums and convention centers, and more

The Public Address System Made it Easy.

2 line inputs, 3 mic/line inputs, 1 remote mic input, 1 telephone paging input, and 1 emergency broadcast input allow connection to all of the equipment a public address system or emergency broadcast system requires.



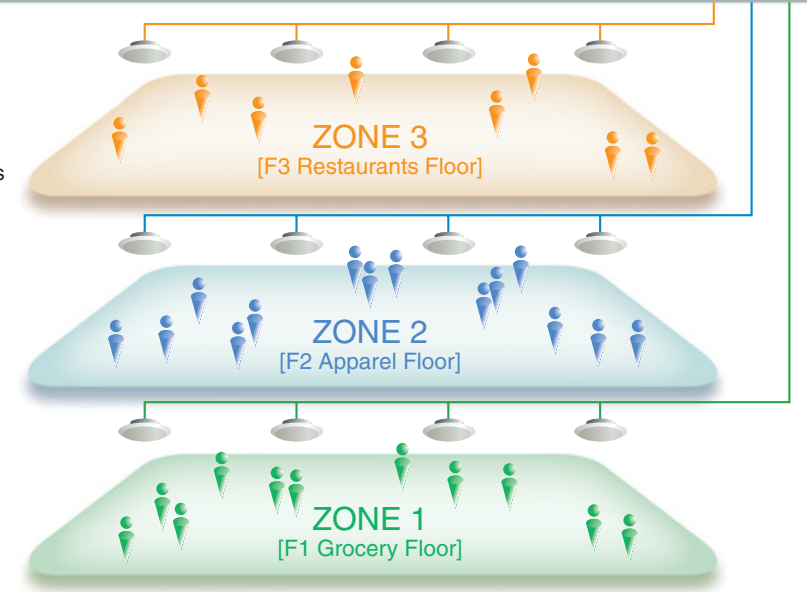
Basic Example

Priority Broadcast Feature Priorities are as follows.

- (1) Emergency announcement
- (2) Telephone paging, input 1, message from Sound Message Unit
- (3) Remote microphone
- (4) input 2, 3 and Line 1, 2

Higher priority broadcasts preempt lower priority broadcasts.

*When (2) and (4) occur simultaneously and inputs compete, mixing occurs. Sound level can be adjusted.



OTHER FEATURES

- High impedance speaker output can be switched easily between 100V and 70V to adapt to system size.
- Fully equipped with recording output, line output, insertion input, through, and regular output.
- OPERATE ON/OFF allows remote control from an external source.
- Simultaneous broadcast can bypass an external attenuator. Emergency broadcasts can thus be heard even when transmission to a particular area is restricted by an attenuator.
- Connecting the 24V battery allows broadcasts to continue during power outages.

Reliable Cooling

Cooling fan control is provided by two thermal sensors monitoring temperatures inside the case.

Energy Saving Design

This mixing power amplifier uses Class-H amplifier technology developed by RAMSA, the Panasonic Professional Audio Group, to minimize power consumption.



The mixing power amp for every broadcast objective — Taking Public Address to the Next Level.



Mixing Power Amplifiers
WA-MA120N [120W]
WA-MA240N [240W]

2-channel Broadcast

Background music and announcement transmission can be transmitted independently to any of three zones, with background music transmitted to one zone and announcements transmitted to another zone.

*2-channel broadcast requires the optional WA-BA240N Booster Power Amplifier

Up To Four Remote Microphones

Up to four (4) WR-210AE remote microphones can be used to broadcast from remote locations. These remote microphones can be used for individual, group, all-at-once or simultaneous broadcast.

Broadcast Simultaneously To Multiple Remote Areas

For example, facilities with multiple buildings can have a WA-MA120N or WA-MA240N installed in each building. Via the simultaneous broadcast BUS I/O connector, broadcasts can be directed to selected all buildings at once.

Troubleshooting

The optional WU-ZS001E Surveillance Unit checks at preset intervals (or 24-hours a day) for overheating and sound and speaker irregularities.

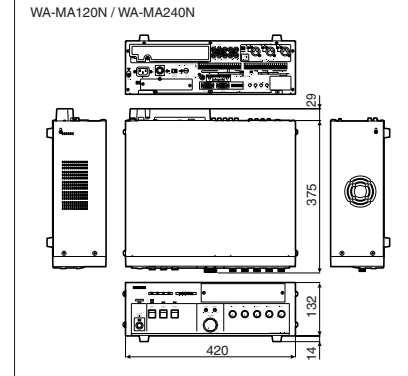
Program Broadcast

With the optional WU-ZM001E Sound Message Unit, an SD memory card can be used to store MP3 data to be broadcast for a week at specified days and times. The SD memory card holds 100 messages.

Add Up To 30 Zones

Depending on scale of application systems may include up to ten (10) WA-MA120N or WA-MA240N mixing power amplifiers for expansion to up to 30 zones.

DIMENSIONS



SPECIFICATIONS

Model No.	WA-MA120N	WA-MA240N
Power Source	AC: 110 V - 120 V or 220 V - 240 V (selectable)	50/60 Hz DC: +24 V, M3 screw terminal*2
Power Consumption (AC)	Non-operation mode (standby)	11 W
	Under normal operating conditions according to IEC60065	95 W
Current Consumption (DC)	Non-operation mode (standby)	0.1 A
	Under normal operating conditions according to IEC60065	4 A
Rated Output	With rated output signal	330 W
	Without rated output signal	120 W
Frequency Response	50 Hz - 15 kHz, -3 ±3 dB	175 W
	Distortion	Less than 1% at 1 kHz rated output
Signal-to-Noise Ratio	More than 60 dB	240 W
	Tone Control	Bass: ±10 dB at 100 Hz, Treble: ±10 dB at 10 kHz
Volume Control	EMG	0 dB to -20 dB
	Others	0 dB to ∞ (off)
Audio Input	INPUT 1-3	Audio
	Control	MIC: -65 dBV / LINE: -22 dBV (selectable) 5 kΩ electronically balanced**1, XLR-3-11 type connector (female) No-voltage make contact input, open voltage: +5 V DC, short-circuit current: under 1 mA, Push-in terminal*4
LINE 1,2	Audio	-22 dBV, 10 kΩ unbalanced, RCA pin jack x 2 (monaural)
	Control	RM: -22 dBV / MIC: -65 dBV (selectable) 10 kΩ electronically balanced**1 No-voltage make contact input, open voltage: +5 V DC, short-circuit current: under 1 mA (1) CALL (2-channel announcement select) (2) BC (activation control of announcement) (3) ALL CALL (activation control of all-zone announcement) (4) Z1 (zone 1 select) (5) Z2 (zone 2 select) (6) Z3 (zone 3 select)
RM (Remote Microphone Input)	Audio	DC +24 V, 180 mA max. (Up to 4 Remote Microphones [WR-210E] can be connected) Push-in terminal*4
	Control	TEL PAGING (Telephone Paging Input) No-voltage make contact input, open voltage: +5 V DC, short-circuit current: under 1 mA, Push-in terminal*4 EMG (Emergency Equipment Input) 0 dBV, 10 kΩ electronically balanced Control No-voltage make contact input, open voltage: +5 V DC, short-circuit current: under 1 mA, Push-in terminal*4 INS IN (Insertion Input) 0 dBV, 100 kΩ unbalanced, RCA pin jack ZONE 1 CALL IN (for 2-channel Announcement) 100 V or 70 V balanced, M3 screw terminal*3
Audio Output	OUTPUT 1-3	100 V / 83 Ω (changeable to 70 V / 42 Ω)
	DIRECT OUT	100 V / 42 Ω (changeable to 70 V / 21 Ω)
SP4 Ω (Low Impedance Loudspeaker)	Impedance	4 Ω
	Connector	M3 screw terminal*3

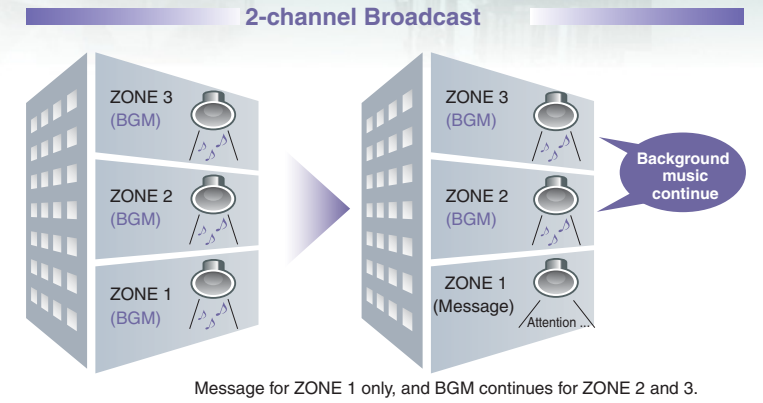
Audio Output	LINE OUT	0 dBV, 10 kΩ adapted, unbalanced, RCA pin jack
	REC OUT	0 dBV, 10 kΩ adapted, unbalanced, RCA pin jack x 2 (monaural)
	INS OUT (Insertion Output)	0 dBV, 10 kΩ adapted, unbalanced, RCA pin jack
	INS THRU (Insertion Through Output)	Through output from INS IN, unbalanced, RCA pin jack
	INPUT D-OUT (Input Direct Output)	0 dBV, 10 kΩ adapted, unbalanced, RCA pin jack (Output for 2-channel announcement from INPUT 1 or RM)
Audio In / Out for Expansion	ALL CALL BUS IN / THRU	Audio: -20 dBV balanced Control: Activation control of all-zone announcement (1) from EMG (2) from TEL / INPUT 1 (3) from RM Connector: 9-pin female D-sub connector x 2 (in / through)
	Call Tone Control Input (CALL SIGN CNT) (Activation of built-in call tones)	No-voltage make contact input, open voltage: +5 V DC, short-circuit current: under 1 mA, Push-in terminal*4, 1.4-Tone (Up), 2.4-Tone (Down), 3.2-Tone (Down) One-shot make: single playback, at make: repeat playback
Operation On/Off Control (OPERATE ON / OFF)	OPERATE ON / OFF	No-voltage make contact input, open voltage: +5 V DC, short-circuit current: under 1 mA, M3 screw terminal*3
	OPERATE LINK CONTROL (OPERATE LINK)	Open collector output, withstand voltage: +30 V DC, operating current: under 50 mA, M3 screw terminal*3
External Attenuator Control In/Out (ATT OVERRIDE)	In	No-voltage make contact input (transfer type relay), withstand voltage: 30 V DC, 250 V AC, contact current: under 3 A (DC / AC) M3 screw terminal*3
	Out	No-voltage make contact output (transfer type relay), withstand voltage: 30 V DC, 250 V AC, contact current: under 3 A (DC / AC) M3 screw terminal*3
Announcement Priority Control (Input Priority at 1-Channel Announcement)	Priority 1	EMG / Priority 2: TEL PAGING, INPUT 1 / Priority 3: RM / Priority 4: INPUT 2, 3, LINE 1, 2
	Priority Indicator	EMG, TEL, RM
Level Meter	Level	5 points: -30 / -20 / -15 / -8 / 0
	Other Functions	• 2-channel announcement by Remote Microphone or paging microphone. • Zone output extension by connecting plural units. (up to 30 zones by 10 units) • All-zone announcement in various operating areas. (up to 10 areas)
Phantom Power Supply for INPUT 1-3	Supply	+16 V, on / off selectable individually
	Power Supply for External Equipment	DC +24 V, 0.8 A max., M3 screw terminal*2
Cooling Fan	Operating Temperature	3 modes: Stop / Low speed / High speed
	Dimensions	0 °C - 45 °C
Weight (Approx.)	Dimensions	420 mm (W) x 146 mm (H) x 404 mm (D) [Height includes rubber feet and depth includes projections such as rear protect cover.]
	Weight	14 kg / 15.5 kg
Finish	Panel	Gun Metallic painting (ABS Resin)
	Case	brack painting, Munsell N1 or equivalent (steel plate)
Accessories	AC power cords (x 2), Spare fuses, Rack mounting brackets, Operating instructions	
	Optional Products	• Remote Microphone: WR-210AE / WR-201E • Booster Power Amplifier: WA-BA240N (240W)

0 dBV = 1 V **1 Can be transformer-balanced with the addition of an optional input transformer.
 *2 Barrier distance: 8.12 mm, Suitable cable gauge: AWG 18 - 14 (Solid) / AWG 14 (Stranded)
 *3 Barrier distance: 6.27 mm, Suitable cable gauge: AWG 22 - 14 *4 Suitable cable gauge: AWG 22 - 14

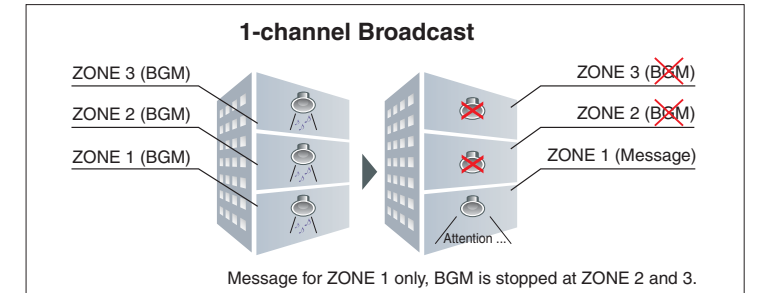
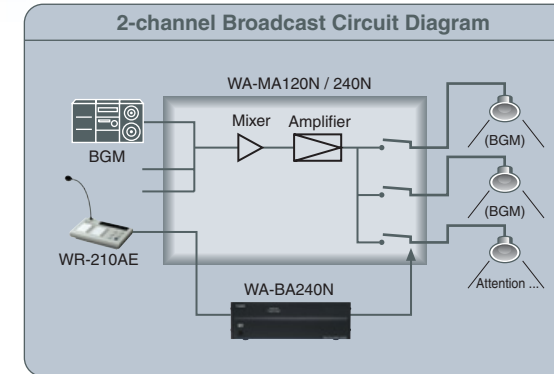
Addition of Booster Power Amplifier enables 2-channel broadcast with separate transmissions delivered to different zones.

2-channel Broadcast

For example, a business-related message is transmitted only to Zone 1 while background music continues to be played throughout the building. Background music continues in Zone 2 and Zone 3.



Message for ZONE 1 only, and BGM continues for ZONE 2 and 3.

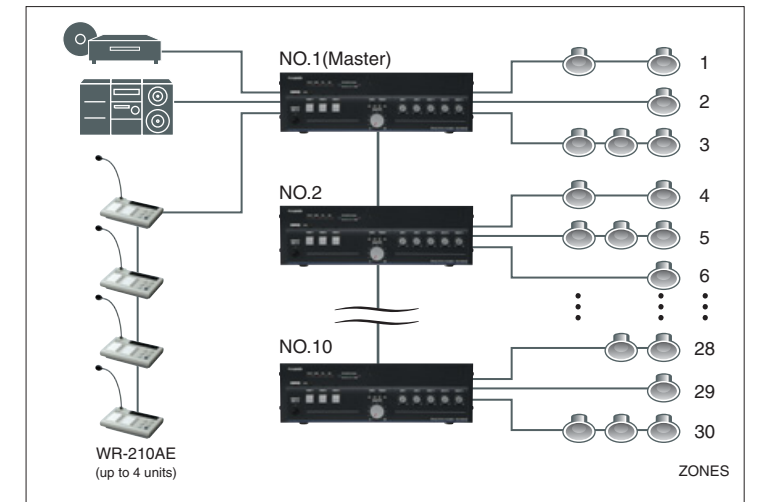


Message for ZONE 1 only, BGM is stopped at ZONE 2 and 3.

Up to 10 units can be connected to increase capacity to 30 zones.

Add Up To 30 Zones

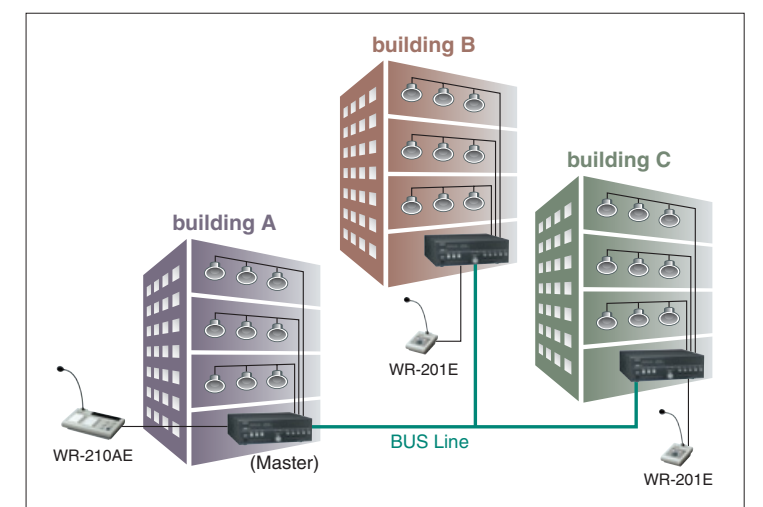
Each WA-MA120N (or WA-MA240N) can drive three output channels. As indicated in the diagram on the right, a system in which a single source drives up to 30 Zones can be constructed.



Loop through connections using the simultaneous broadcast BUS I/O connector allows you to transmit through multiple independent units to all areas simultaneously.

Broadcast Simultaneously To Multiple Remote Areas

In the illustration to the right, buildings A, B and C are each equipped with its own Mixing Power Amplifier. Even so, an emergency message can be transmitted simultaneously to all three buildings.



Optional accessories for even greater convenience and security

2-channel Broadcast & Cable Extension

Booster Power Amplifier WA-BA240N

Output Power : 240W
Input : Line/100V
Output : 100V/70V

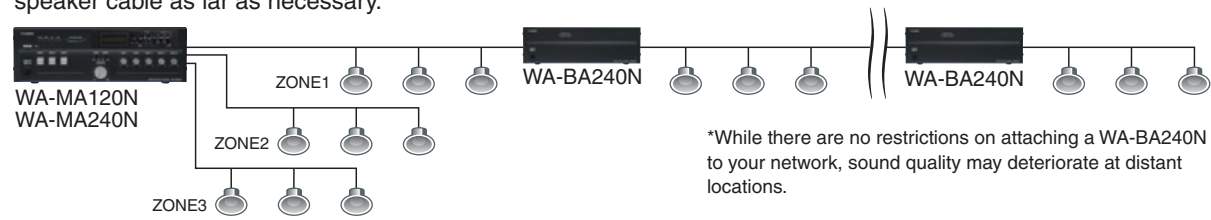


This 240W monaural amplifier delivers 100V/70V to drive high-impedance speakers and can also be used with low-impedance speakers and is equipped for both line and 100V input. Addition of this one unit is all that is required for 2-channel broadcast. It can also be used as a booster amplifier in cable extension applications.

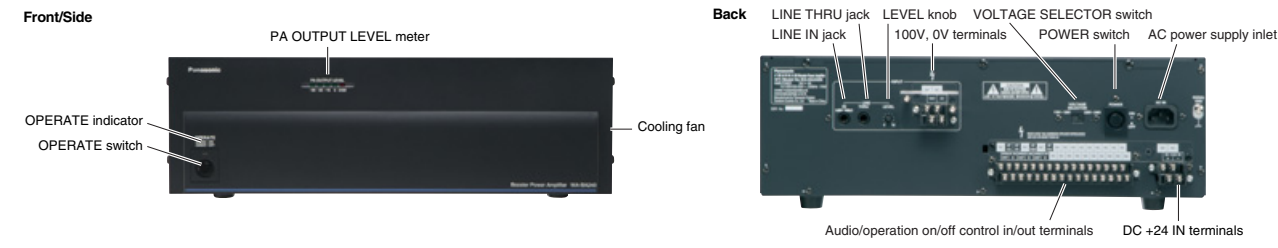
Addition of an Booster Power Amplifier permits cable extension to deliver sound to distant locations.

Cable Extension

When you need to broadcast to distant locations, the optional Booster Power Amplifier allows you to extend the speaker cable as far as necessary.



Major Operating Controls & Terminals

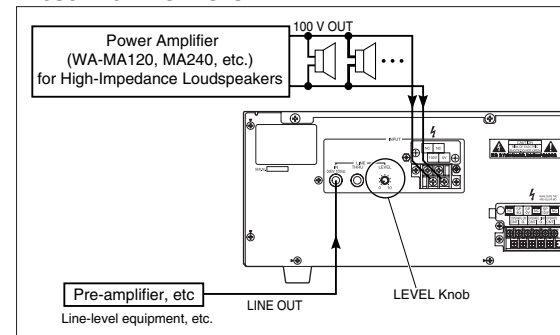


SPECIFICATIONS

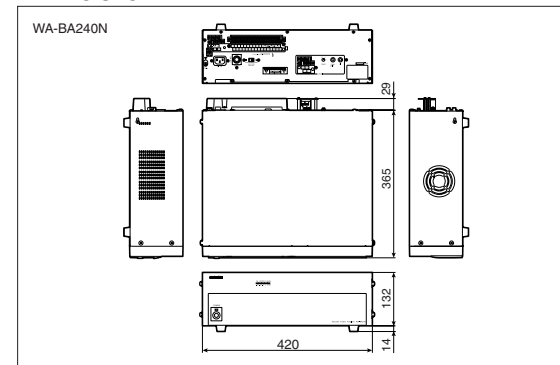
Model No.	WA-BA240N
Power Source	AC: 110 V - 120 V or 220 V - 240 V (selectable), 50 / 60 Hz DC: +24 V, M3 screw terminal*2
Power	Non-operation mode (standby) 14 W Under normal operating conditions according to IEC60065 175 W With rated output signal 680 W
Current Consumption (DC)	Non-operation mode (standby) 0.1 A Under normal operating conditions according to IEC60065 8 A With rated output signal 20 A
Rated Output	240 W
Frequency Response	50 Hz - 15 kHz, -3 ±3 dB
Distortion	Less than 1% at 1 kHz rated output
Signal-to-Noise Ratio	More than 60 dB
Volume Control	LINE IN 0 dB to ∞ (off)
Audio Input	LINE IN 0 dBV, 100 kΩ electronically balanced, Tip-Ring-Sleeve (TRS) phone jack 100V Input 100 V balanced*1, M3 screw terminal*2
Audio Output	LINE THRU Through output from LINE input, balanced, Tip-Ring-Sleeve (TRS) phone jack SP100 V Output Voltage 100 V / 42 Ω / Impedance M3 screw terminal*3 SP70 V Output Voltage 70 V / 21 Ω / Impedance M3 screw terminal*3 SP4 Ω (Low Impedance Loudspeaker Output) Impedance 4 Ω / Impedance M3 screw terminal*3
Operation On/Off Control (OPERATE ON / OFF)	No-voltage make contact input, open voltage: +5 V DC, short-circuit current: under 1 mA, M3 screw terminal*3
Operation Link Control (OPERATE LINK)	Open collector output, withstand voltage: +30 V DC, operating current: under 50 mA, M3 screw terminal*3
Level Meter	5 points, -30 / -20 / -15 / -8 / 0
Cooling Fan	3 modes, Stop / Low speed / High speed
Operating Temperature	0 °C - 45 °C
Dimensions	420 mm (W) x 146 mm (H) x 394 mm (D) (Height includes rubber feet and depth includes projections such as rear protect cover.)
Weight (Approx.)	15 kg
Finish	Panel: Gun Metallic painting (ABS Resin) Case: black painting, Munsell N11 or equivalent (steel plate)
Accessories	AC power codes (x2), Rack mounting brackets, Operating instructions

0 dBV = 1 V
*1 Can be transformer-balanced with the addition of an optional input transformer.
*2 Barrier distance: 8.12 mm, Suitable cable gauge: AWG 18 - 14 (Solid) / AWG14 (Stranded)
*3 Barrier distance: 6.27 mm, Suitable cable gauge: AWG 22 - 14

ADJUSTING INPUT VOLUME



DIMENSIONS

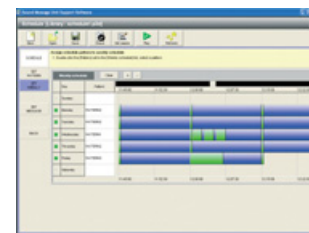
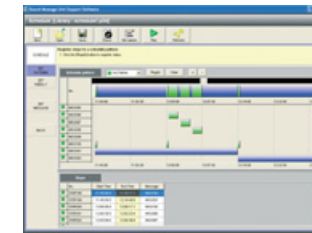
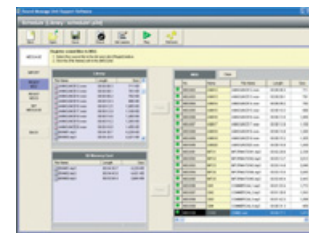


Program Broadcast

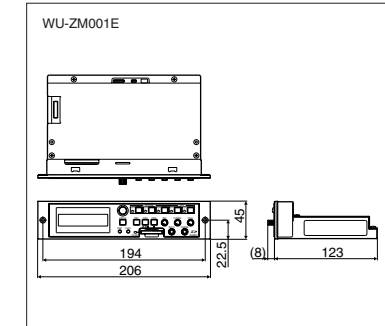
Sound Message Unit WU-ZM001E



Inserted into the main unit, the Sound Message Unit allows up to 100 messages to be broadcast at regular intervals from Monday to Sunday. Timing and message content can be fine tuned with programs with up to 999 steps from a Personal Computer.



DIMENSIONS



WU-ZM001E in WA-MA240N

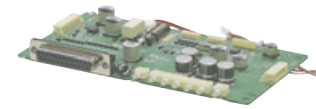


SPECIFICATIONS

Power Requirements	Rated Voltage 24V DC (supplied internally by amplifier) Consumption Current Approximately 220 mA
Frequency characteristics	Line system 50 Hz to 15 kHz ±2 dB Microphone system 100 Hz to 10 kHz ±2 dB
Distortion factor	1% or less (1 kHz standard)
Audio signal input and output	Recording input [REC IN] Input level: Microphone -65 dBV/Line -12 dBV alternating, input level is adjustable Input impedance: 10 KΩ unbalanced S/N quotient: 70 dB or higher (Line) Monaural: 3.5 φ mini-jack Monitor output [PHONES] Output level: -12 dBV, output level is adjustable Output impedance: 32 Ω unbalanced (load impedance: 32 Ω or higher) S/N quotient: 70 dB or higher Stereo: 3.5 φ mini-jack
MSG Control Input/Output	EMG1 message execute input [EMG1] Open voltage +5 V DC; Short circuit current 1 mA (on back of Amplifier) EMG2 message execute input [EMG2] Open voltage +5 V DC; Short circuit current 1 mA (on back of Amplifier) Regular announcement execute input [MSG] Open voltage +5 V DC; Short circuit current 1 mA (on back of Amplifier) Clock compensation input [CLK ADJ.] Open voltage +5 V DC; Short circuit current 1 mA (on back of Amplifier)
Controls	Emergency message EMG 1-2 switches [EMG1] and [EMG2] Regular announcements MESSAGE 1-3 switches [MESSAGE1-3] Menu controls LCD: 16 characters x 2 lines MENU switch [MENU], ENTER switch, CANCEL switch [CANCEL], SELECT dial [SELECT], SCHEDULE switch [SCHEDULE], CLK ADJ switch [CLK ADJ.] Volume adjustment REC knob [REC], PHONES knob [PHONES], LEVEL knob [LEVEL]
Storage media	SD memory card (Panasonic cards are recommended) * Up to a maximum of 2 GB
Audio signal format	Playback WAV format: 44.1 kHz, 16 bit, MONO MP3 format: 44.1 kHz, 128 kbps, STEREO * STEREO audio signals are played back mixed on both channels. Recording WAV format: 44.1 kHz, 16 bit, MONO * Maximum continuous recording time is 10 minutes.
Scheduled announcements	Schedule pattern assigned to day of the week 9 types of schedule patterns 999 steps possible for each pattern 100 types of messages or combined messages can be set for each step
Emergency message	2 types of messages, EMG1 message and EMG2 message can be written to the internal memory Each message has a signal tone (10 seconds) and a message (20 seconds)
Setting support software	Computer software provided (compatible with Windows 2000 and XP) Supported languages: English and Simplified Chinese
Operating temperature range	0 °C to +40 °C
Dimensions	206 mm (W) x 45 mm (H) x 130 mm (D) * Excluding protrusions.
Weight (Approx.)	665 g
Finish	Panel: Gun metal coating

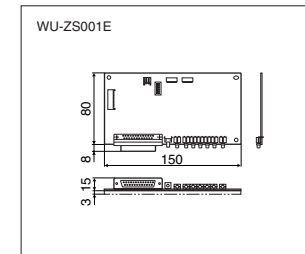
Troubleshooting

Surveillance Unit WU-ZS001E



Inserted into the main unit, the Surveillance Unit tests at preset intervals for internal amplifier problems and speaker circuit anomalies (short circuits, breaks, grounding) and lights a warning LED if problems are detected. Since the cause is known immediately, repairs can be undertaken immediately.

DIMENSIONS



SPECIFICATIONS

Power Requirements	Rated Voltage 24V DC (supplied internally by amplifier) Consumption Current Approximately 100 mA
Fault Detection	Line Short (When impedance is -50% of reference impedance value) Disconnect (When impedance is +50% of reference impedance value) Grounding (When ground impedance value is 50 kΩ or less)
Amplifier	Audio fault (When audio that is greater than the pilot signal level cannot be detected by the amplifier circuit.) Abnormally high temperature (When transformer temperature is +100 °C or greater) Speaker line check trigger/Impedance reference value acquisition trigger
SW	Impedance reference value setting/Speaker line check status indicator (amber/green) Line short/disconnect indicator: ZONE 1-5 (red/amber) GROUND FAULT indicator (red)
Indicator Operation	LED
Other I/F	Parallel External I/F Input 2 (Tr input): Open circuit voltage 5 V; Short circuit current 1 mA Output 17 (open collector output): No-voltage make contact, control voltage 30 V max., control current 50 mA max. Connector: D-sub 25-pin Time Adjustment Input (Tr input): Open circuit voltage 5 V; Short circuit current 1 mA
Ambient Temperature	Rated Temperature: +5 °C to +35 °C Operating Temperature: 0 °C to +45 °C
Dimensions	150 mm (W) x 18 mm (H) x 88 mm (D)
Weight (Approx.)	80 g

OPTIONAL COMPONENTS & ACCESSORIES

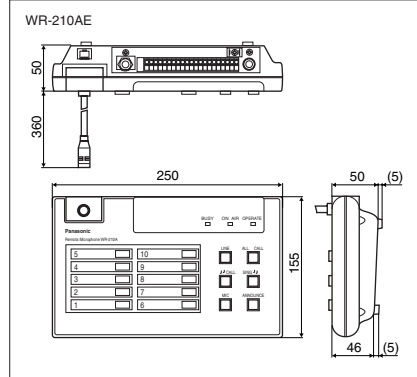
Remote Control Microphone WR-210AE



- This Remote Microphone is designed for use with public address (PA) systems. It supports both separate zone announcement (10 broadcasts) and all-zone announcement capabilities.

DIMENSIONS

Unit: mm



SPECIFICATIONS

General

Power Supply	24 V DC, 45 mA or less (connection terminal)
Ambient Temperature	0 °C - +45 °C
Dimensions	250 (W) mm x 55 (H) mm x 155 (D) mm (excluding projections and flexible microphone)
Weight	Approx. 740 g (1.63 lbs)
Finishing	Top case : OA ivory color (Munsell value 5.5Y7.5/0.3 approximate color) Bottom case: Gray color (Munsell value N5.5 approximate color)

Audio-signal Input/Output

Frequency Characteristic	Line: 50 Hz-15 000 Hz -3±2 dB
Distortion	1 % or less (at 1 000 Hz)
Microphone Input	Unidirectional ECM microphone length: 350 mm Input Sensitivity: -49 dBV (-44 dBV at factory) 50 dB minimum
S/N Ratio	
LINE IN	Ø6.3 mm tip sleeve phone jack unbalanced Input Sensitivity: -12 dBV (-2 dBV at factory) Input impedance 10 kΩ 70 dB minimum
S/N Ratio	
Audio Output	Connection terminal H.C. COM (0 V) balance Output Level: 0 dBV, matching load impedance 600 Ω
Record Output	Ø6.3 mm tip sleeve phone jack unbalanced Output Level: 0 dBV, matching load impedance 10 kΩ

Control Output (Quick connection terminal panel)

Control Capacity	Max: 30 V DC, 80 mA DC
Announcement Control	1 channel
Zone Control	1-10 channel
All-Zone Control	CKO one channel
Call Sign Control	Rising, falling, 1 channel each
Priority Control	Priority input, priority output 1 channel each

Other

Operation Buttons	Individual, microphone, channel, all-zone, call sign up/down, announce
Indicators	OPERATE, ON AIR, BUSY
Extension I/F Connector	1

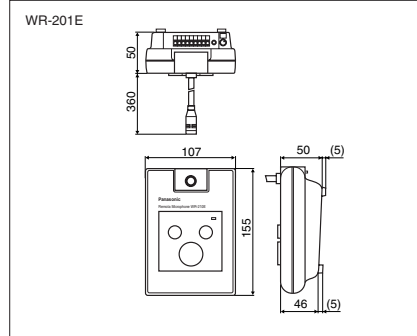
Remote Microphone WR-201E



- Designed the MIC and LINE buttons allow you to select mic audio or line audio for announcement.

DIMENSIONS

Unit: mm



SPECIFICATIONS

General

Power Supply	24 V DC, 45 mA or less (connection terminal)
Ambient Temperature	0 °C - +45 °C
Dimensions	107 (W) mm x 55 (H) mm x 155 (D) mm (excluding projections and flexible microphone)
Weight	Approx. 400 g
Finishing	Top case : OA ivory color (Munsell value 5.5Y7.5/0.3 approximate color) Bottom case: Gray color (Munsell value N5.5 approximate color)

Audio-signal Input/Output

Frequency Characteristic	Line : 50 Hz-15,000 Hz ±3 dB
Distortion	1 % or less (at 1 000 Hz)
Microphone Input	Unidirectional ECM microphone Input Sensitivity: -49 dBV (-44 dBV at factory) 50 dB minimum
S/N Ratio	
LINE IN	Ø3.5 mm stereo mini jack Input Sensitivity: -12 dBV (-2 dBV at factory) Input impedance 10 kΩ 70 dB minimum
S/N Ratio	
Audio Output	Connection terminal H.C. balance Output Level : 0 dBV, matching load impedance 600 Ω
Call Sign	2-tone signal

Control Output

Announcement Control	1 channel, connection terminal, max DC 30 V, DC 20 mA
Call Sign Control	1 channel

Other

Operation Buttons	Microphone line, call sign
Indicators	OPERATE, ON AIR

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Important

– Safety Precaution: carefully read the operating instructions and installation manual before using this product.

- All TV pictures are simulated.
- Weights and dimensions are approximate.
- Specifications are subject to change without notice.
- These products may be subject to export control regulations.

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