TOA

UHF WIRELESS MICROPHONE SYSTEMS

COOKBOOK

General System Features

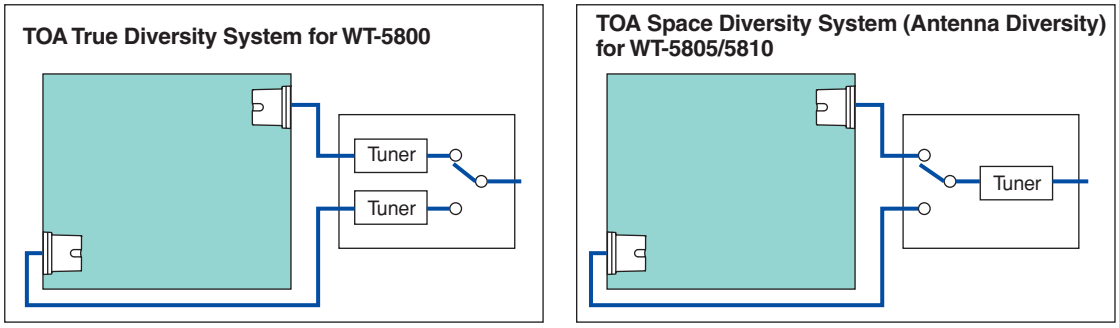
TOA has increased the range and audibility of its wireless microphones, by including a built-in antenna on both lavaliere and WM-5220 hand-held models, increasing support for low-noise condenser microphones, and making all lavaliere microphones omnidirectional.

Microphone running costs have been reduced as well, thanks to TOA's exclusive single battery power supply feature, which also makes possible a slimmer, easier-to-hold microphone body design. Further lavaliere innovations include single battery operation, a connector that supports ø3.5 mini-plugs for TOA microphones, and a lighter body transmitter for the headset models. For greater operational precision, the microphone LED now comes in two colors. The latest TOA line-up of wireless microphones is comprised of the handheld WM-4200/ 4210/4220/5220 models, and the lavaliere WM-5320, WM-5320H (headset), and WM-5320A (aerobics applications headset) models.

- Up to 16 microphones can be used in the same operating area without interference.
- Exclusive TOA single battery (with 10-hour average operation) reduces microphone size and operating costs.
- Extensive operating area allows microphones to operate up to 120 meters away from their tuner units.

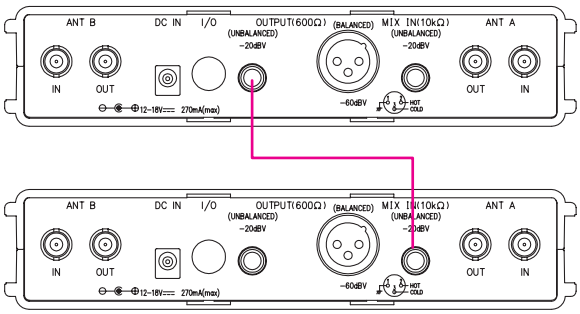
TOA Wireless System Technology

- TOA's proprietary true diversity and space diversity technologies and algorithms provide constant area coverage. Overall performance and reliability are also enhanced through TOA's simpler and more effective circuitry compared to conventional diversity tuners.



What is the "diversity reception" system?
Some radio signals transmitted from a wireless microphone reach the receiving antenna directly, while others are first reflected off walls and floors before being received. When the strength of these two arriving radio signals is nearly identical and they happen to be 180° out of phase, they may cancel each other out, resulting in reception dead spots. The "diversity reception" system employs a receiving method that eliminates such dead spots.

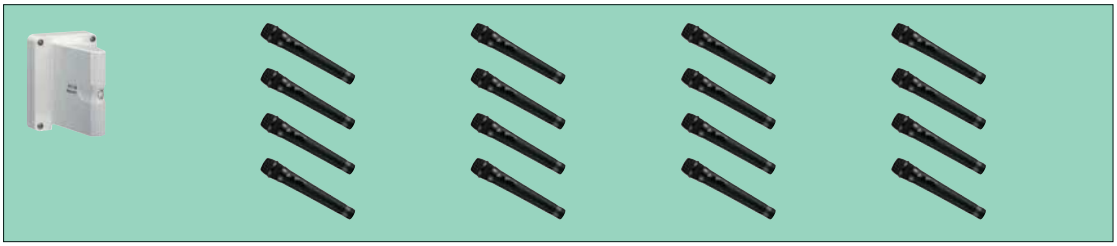
- Carrier squelch function automatically mutes output when the incoming signal strength goes below a settable signal strength level to prevent annoying noise.
- Microphone sensitivity control allows adjusting the input level to suit the user's voice level and to prevent overloading or distortion.
- Auto mixing input function makes it possible to connect one unit's AF input to the AF output of another unit.



- Usable frequencies scanning and vacant channel search function.
- Compander circuitry works to minimize ambient noise.

TOA Wireless System Technology

- Up to 16 microphones can be used in the same area without interference problems.

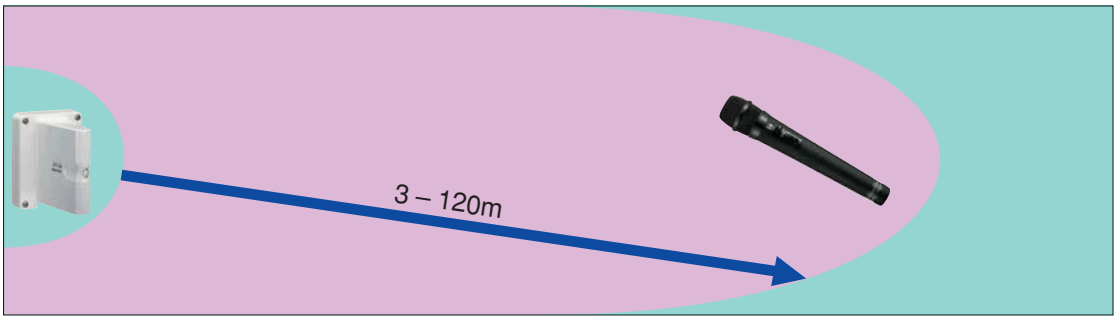


To reduce interference:

- New parts and construction have been used to improve immunity to interference. The anti-interference characteristics of high-frequency circuits have been improved.
- A single balanced mixer circuit enhances the anti-interference characteristics of high-frequency circuits.
- Diversity reception is used.
- The system is equipped with volume control, squelch functions (carrier, noise, tone), and frequency-scanning channel searching.

- A wide operating range allows microphones to be used up to a maximum of 120 meters distance from the tuner units.

(In areas where a reasonably good direct line of sight can be established, i.e. where there are no major obstacles to radio signal transmission.)



- Extended battery life: over 10 hours of continuous use at average temperatures.
- Single battery operation for reduced size and weight.

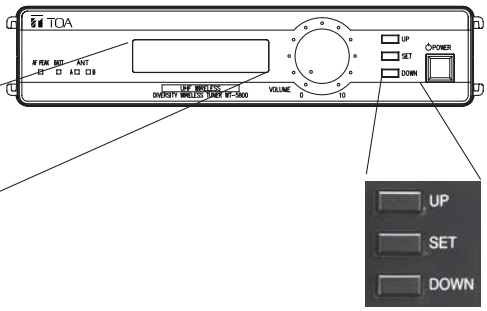
Microphone movement range

- Keep each microphone at least 0.5 meter away from other microphones.
- Keep each microphone at least 3 meters away from antennas.

Antenna installation

- Be sure to connect at least one antenna to each of the antenna inputs A and B. Install antennas so that the distance between them is at least 1 meter, for example, by placing them on opposite sides of the room.

Indicator (WT-5800/5805)



Initial Screen

B1-5 801.525MHz
RF AF

SET — Press the Set key for over a second

Selecting MENU > SET CHANNEL (SET) **Setting CHANNEL >=5 801.525MHz** (UP/DOWN) **Setting CHANNEL > 6 802.975MHz** (UP/DOWN) **Setting CHANNEL > 7 804.725MHz** ●●●Exit

A desired channel/frequency selected with the Up or Down key.

Selecting MENU > SET BANK (SET) **Setting BANK >=1:5 801.525MHz** (UP/DOWN) **Setting BANK > 2:1 799.050MHz** (UP/DOWN) **Setting BANK > 3:1 799.475MHz** ●●●Exit

The currently-set Bank number and frequency displayed. A desired Bank number/frequency selected with the Up or Down key.

Selecting MENU > SET SQ LEVEL (SET) **Setting SQ LEVEL RF■■ >=■■** (UP/DOWN) **Setting SQ LEVEL RF■■ > ■■■**

Squelch level referring to the on-screen bar-graph meter (6 segments) which can be changed with Up or Down key.

Selecting MENU > SET LCD POWER (SET) **Setting LCD PW. >=HIGH (Bright)** (UP/DOWN) **Setting LCD PW. > LOW (Dark)**

Either "HIGH (Bright)" or "LOW (Dark)" selected with the Up or Down key,

Setting MENU > CHANNEL CHECK (SET) **CHANNEL Checking 01234■6789A....** **Vacant CHANNEL > 0 : 798.625MHz** (UP/DOWN) **Vacant CHANNEL > 1 : 798.975MHz** ●●●Exit

*The channel number in use is not displayed.

When CHANNEL Checking, turn on the microphone(s) in which the frequency has been already set up. Only idle channel numbers with frequency are displayed.

Selecting MENU > RF CHECK (SET) **RF Checking > Ant-A SQ-Open** (UP/DOWN) **RF Checking > Ant-B SQ-Open**

Selecting MENU > About Model (SET) **Model WT-5800 Band-C Ver 1.00**

Model number, preset frequency band, and software version are indicated.

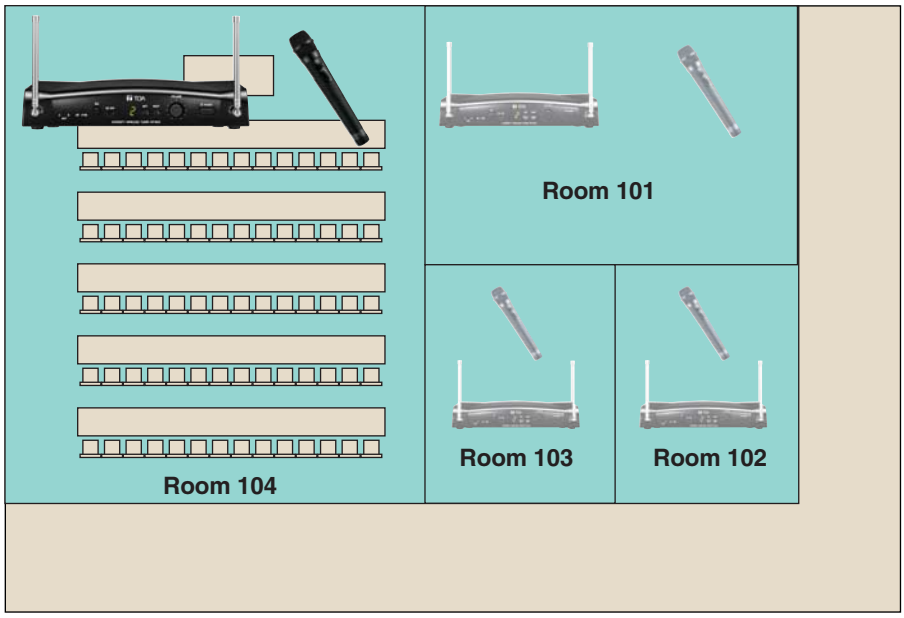
Selecting MENU > Exit

SET — Back to the initial screen.

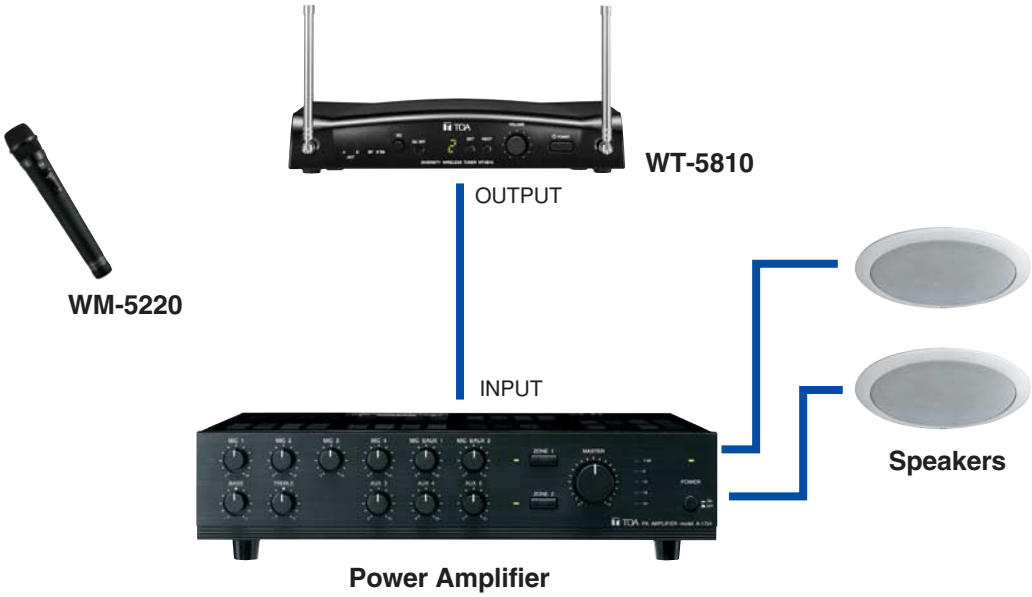
B1-5 801.525MHz
RF AF

Classroom

• An example with WT-5810

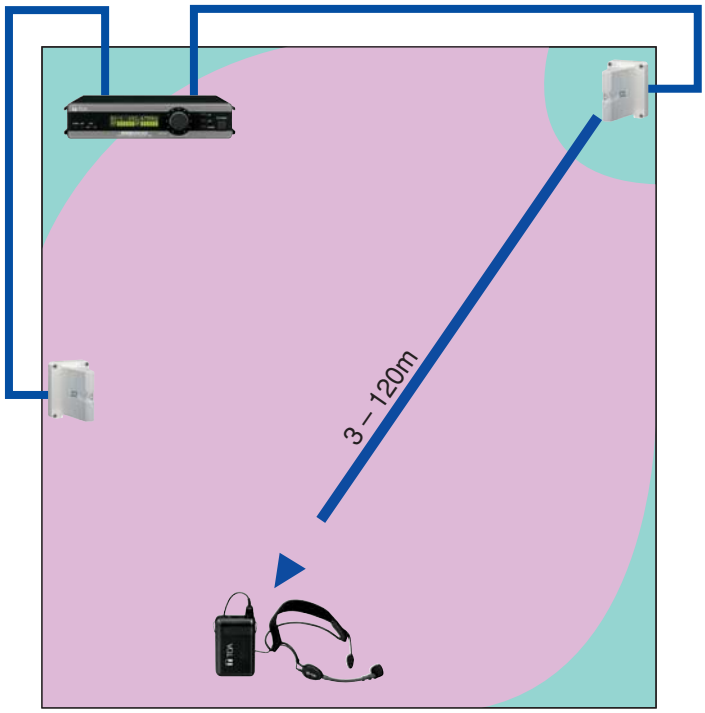


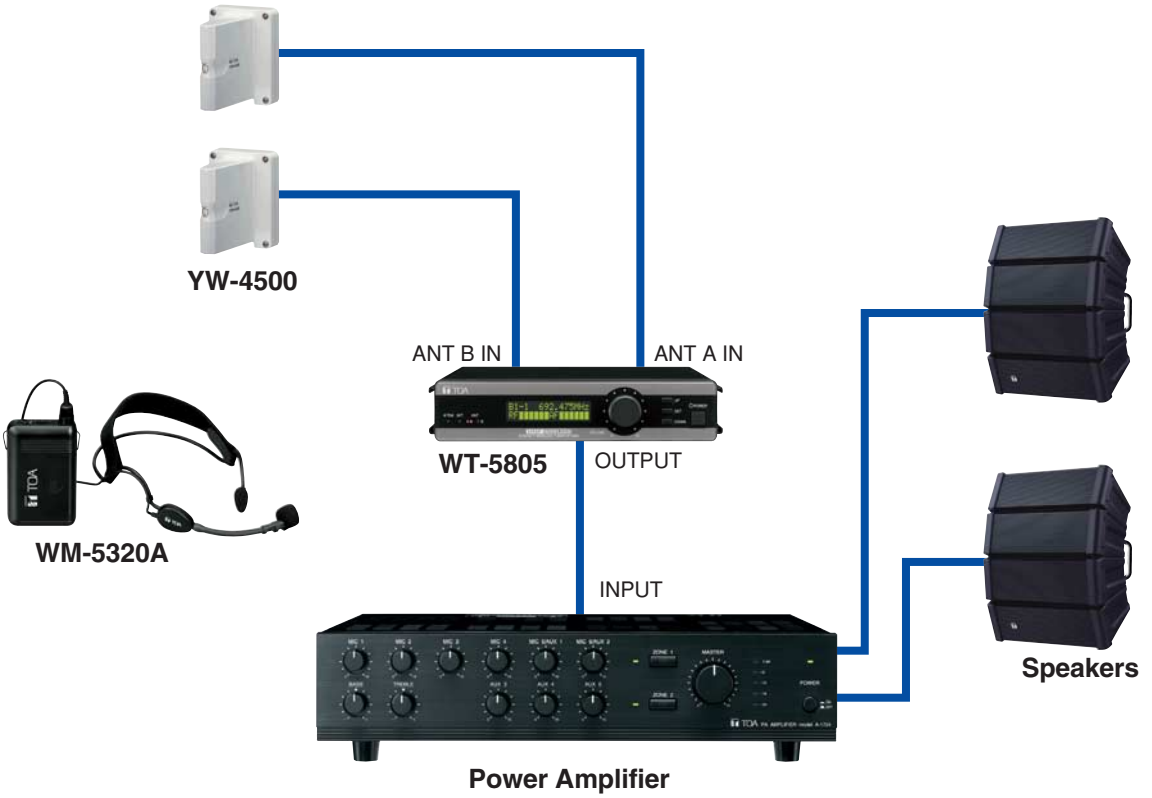
Caution: Please set difference frequency in each room to prevent interference.



Gymnasium

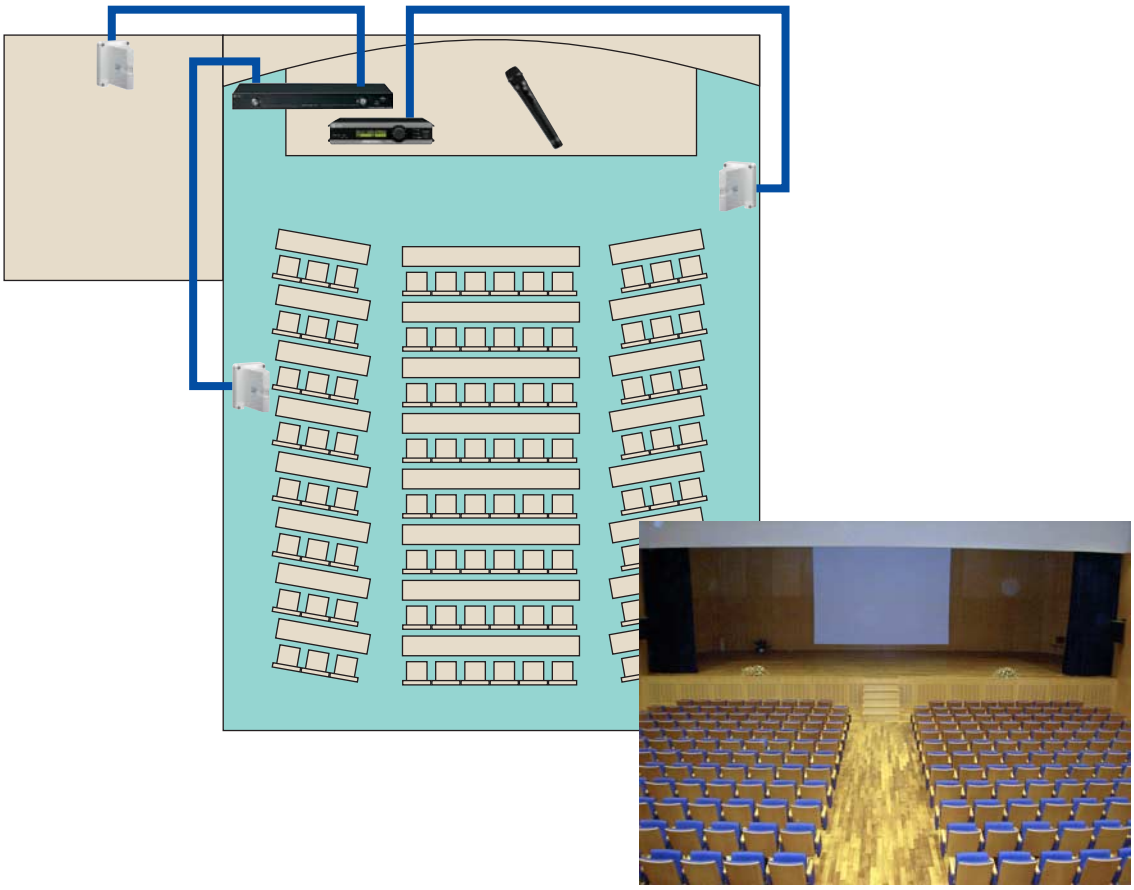
• **An example with WT-5805**

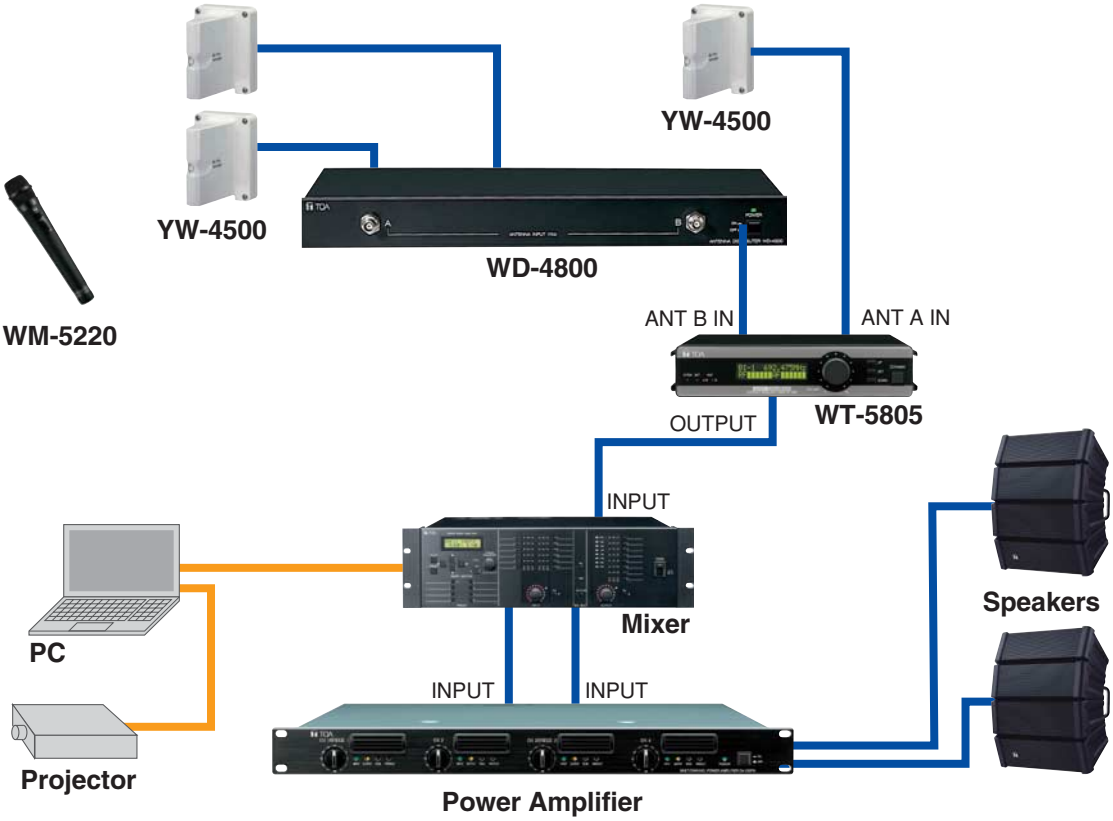




Auditorium

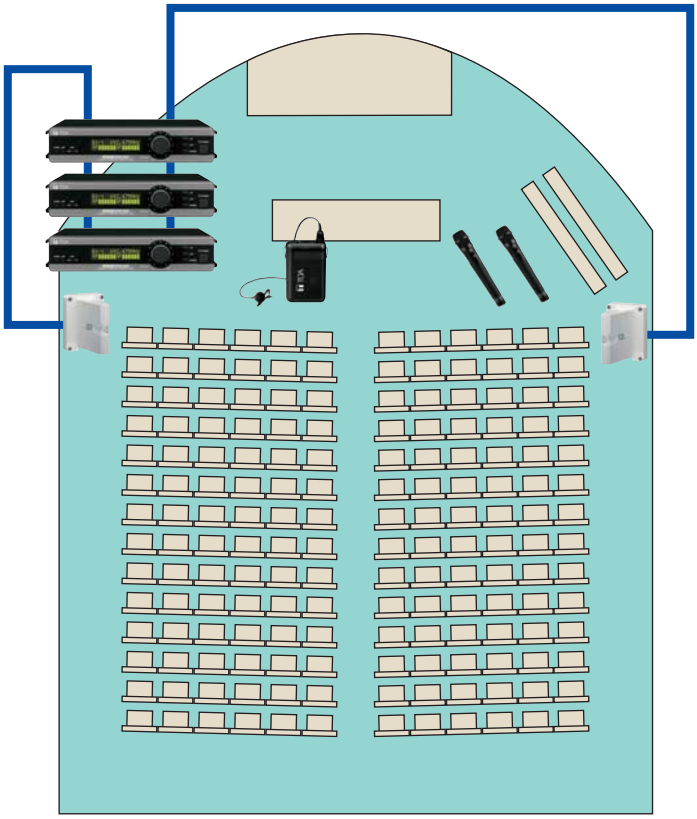
• An example with WT-5805

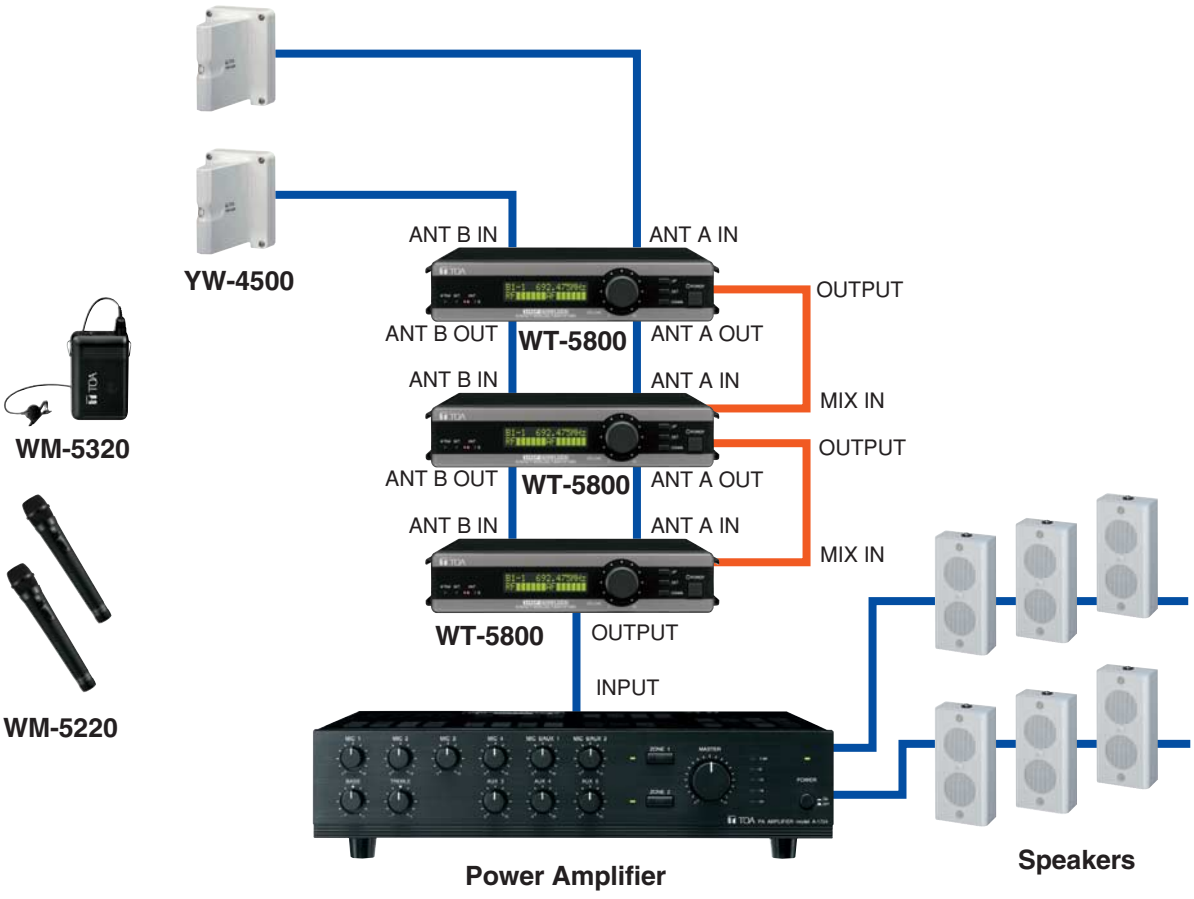




House of Worship

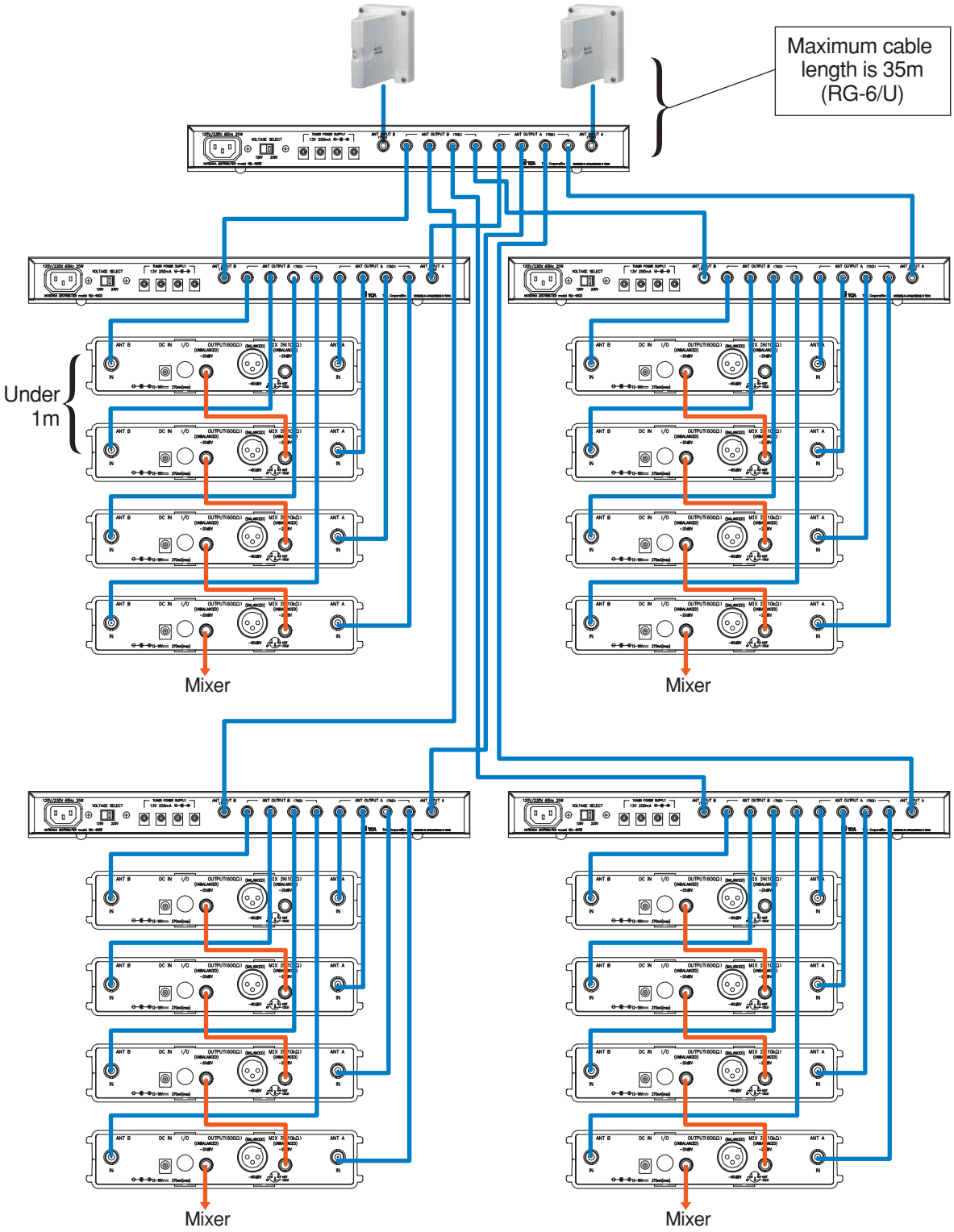
• **An example with WT-5800**





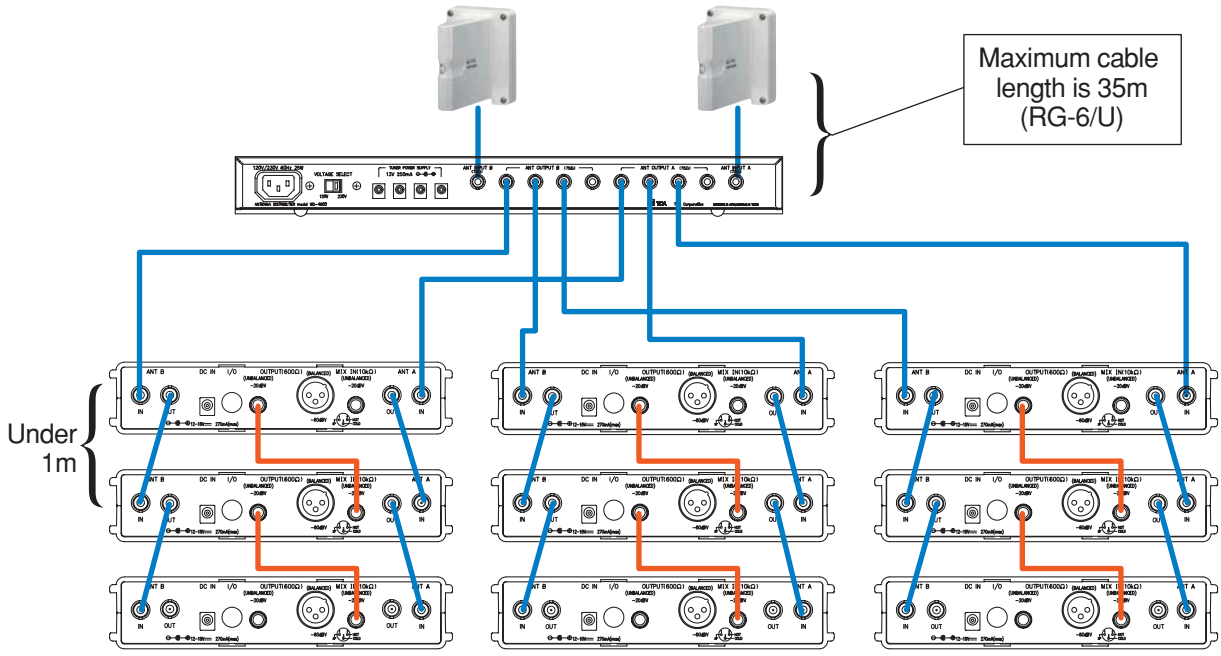
Simultaneous use of WT-5805 + WD-4800

- **Using the WD-4800, a system allowing simultaneous use of up to 16 separate channels can be configured.**



Simultaneous use of WT-5800

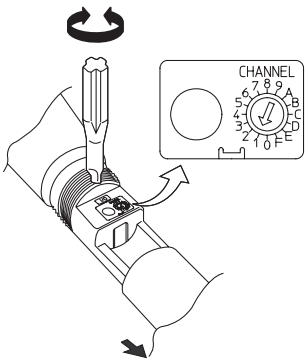
- **The WT-5800 comes with an antenna input and output. Using these terminals, wireless tuners can share a set of antennas.**



* the antenna loop outputs should only be used for a maximum of two other receivers.

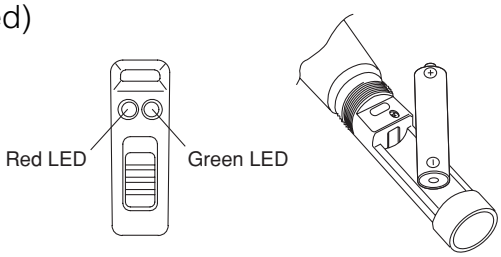
WM-5220

- Operating range: 3m - 120m
- Electret condenser cardioid microphone element
- 16 selectable channel frequencies



- Maximum input level: 126 dB SPL
- ON/OFF switch prevents the microphone from rolling

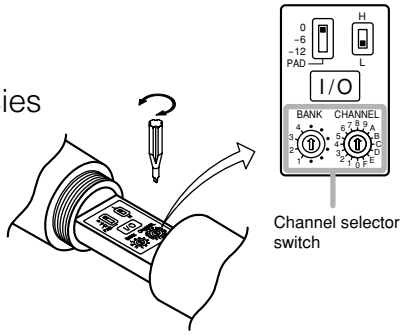
- Single AA battery operation for more compact and lightweight body
- Low-battery indicator(Sufficient power/Green, Low battery/Dimming green, Empty/Red)



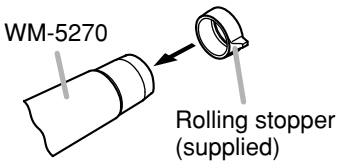
- Built-in antenna

WM-5270

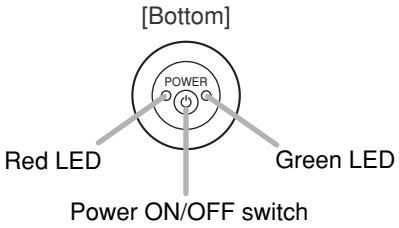
- Operating range: 3m - 120m
- Dynamic cardioid microphone element
- Four 16-channel banks of circuit frequencies



- Input sensitivity control included
- Maximum input level: 142 dB SPL
- Rolling stopper prevents the microphone from rolling



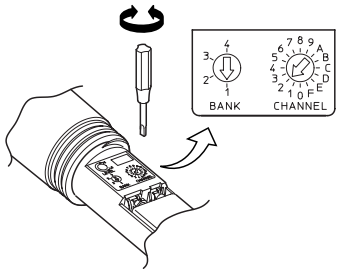
- Single AA battery operation for more compact and lightweight body
- Low-battery indicator (When the battery capacity becomes low, the green LED of the Power/Battery lamps starts to dim, while the red LED to light.)



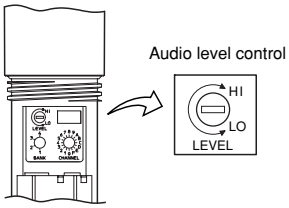
- Built-in antenna

WM-4200

- Operating range: 3m - 150m
- Dynamic cardioid microphone element designed for vocal use
- Four 16-channel banks of circuit frequencies



- Input sensitivity control included

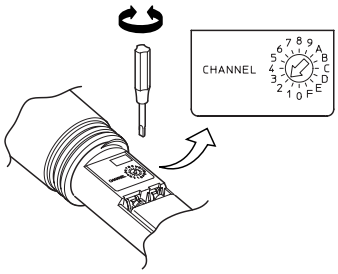


- Maximum input level: 145 dB SPL
- Dynamic range: over 110 dB
- Rubber coating minimizes handling noise
- ON/OFF switch designed to prevent accidental activation

- Single 9V battery operation
- LED low battery indicator (Sufficient power/Orange, Low battery/Flashing orange)

WM-4210

- Operating range: 3m – 120m
- Dynamic cardioid microphone element designed for vocal use
- 16 selectable channel frequencies

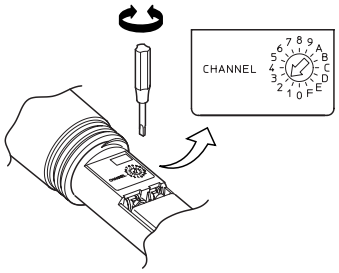


- Maximum input level: 130 dB SPL
- Dynamic range: over 110dB
- ON/OFF switch also keeps mic from rolling when put down

- Single 9V battery operation
- LED low battery indicator (Sufficient power/Orange, Low battery/Flashing orange)

WM-4220

- Operating range: 3m – 120m
- Electret condenser cardioid microphone element for speech use
- 16 selectable channel frequencies



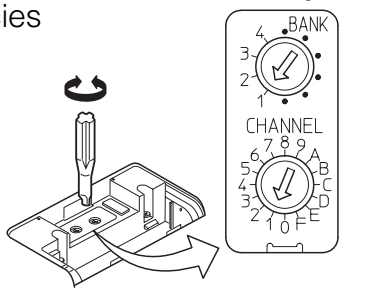
- Maximum input level: 125 dB SPL
- Dynamic range: over 100dB
- ON/OFF switch also keeps mic from rolling when put down

- Single 9V battery operation
- LED low battery indicator (Sufficient power/Orange, Low battery/Flashing orange)

WM-5320

- Operating range: 3m – 120m
- Omnidirectional electret condenser microphone element
- Four 16-channel banks of circuit frequencies

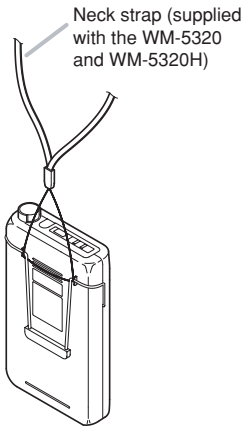
Channel setting switch



- Maximum input level: 110 dB SPL
- Built-in circuitry minimizes ambient noise effects
- Single AA battery operation for more compact and lightweight body

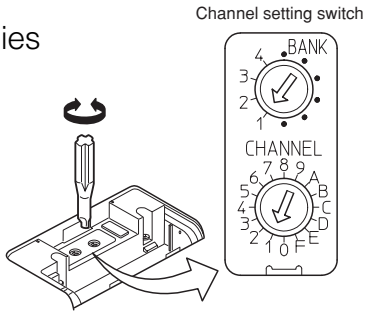
- Low-battery indicator(Sufficient power/Green, Low battery/Dimming green, Empty/Red)
- Connector for 3.5 mini-plugs
- Built-in antenna
- Neck strap is provided

Neck strap attachment

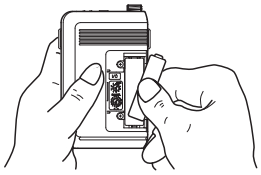


WM-5320H

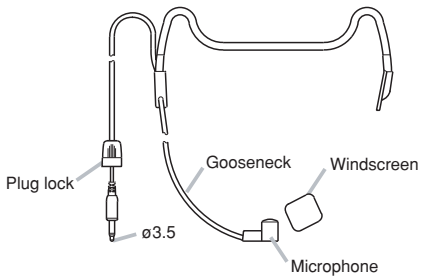
- Operating range: 3m – 120m
- Unidirectional electret condenser microphone element
- Four 16-channel banks of circuit frequencies



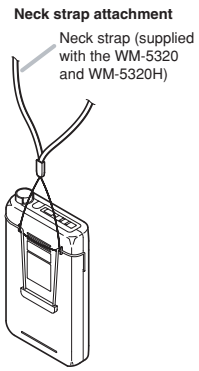
- Maximum input level: 120 dB SPL
- Built-in circuitry minimizes ambient noise effects
- Single AA battery operation for more compact and lightweight body



- Low-battery indicator
- Connector for 3.5 mini-plugs
- Secure and comfortably fitting headset

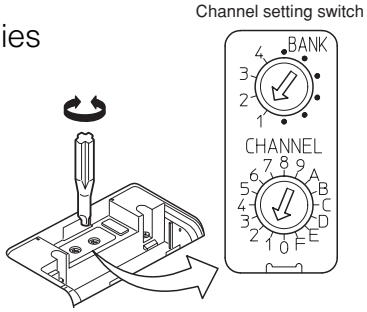


- Built-in antenna
- Neck strap is provided



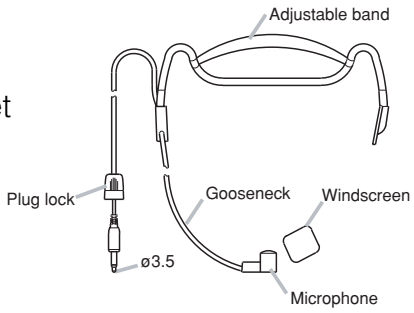
WM-5320A

- Operating range: 3m – 120m
- Unidirectional electret condenser microphone element
- Four 16-channel banks of circuit frequencies



- Maximum input level: 120 dB SPL
- Built-in circuitry minimizes ambient noise effects
- Single AA battery operation for more compact and lightweight body

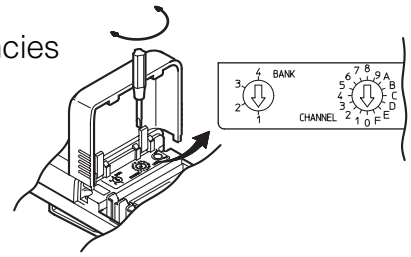
- Low-battery indicator
- Connector for 3.5 mini-plugs
- Built-in antenna
- Extra-secure and comfortably-fitting headset



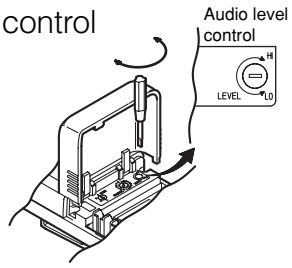
- Sweat-resistant headset microphone
- Securely-fitting belt with pouch

WM-4300

- Operating range: 3m – 120m
- Electret condenser cardioid microphone element
- Four 16-channel banks of circuit frequencies



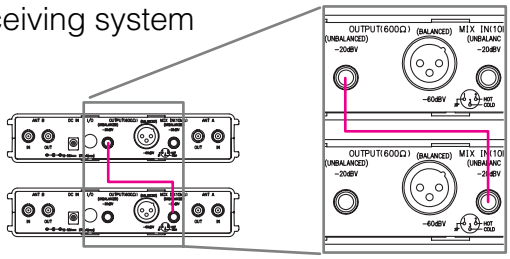
- Maximum input level: 120 dB SPL
- Built-in Input sensitivity control



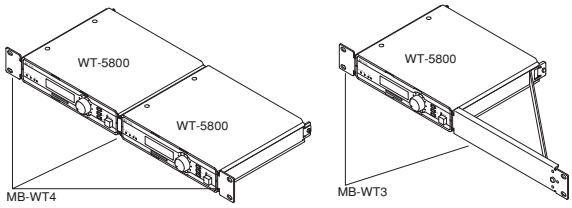
- Highly reliable TA-4 (XLR-type) mini-cannon microphone plug
- Belt clip rotatable 360 degrees
- Flashing LED low battery indicator

WT-5800

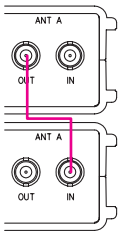
- Phased Lock Loop (PLL) synthesis operation
- Four 16-channel banks of circuit frequencies
- True diversity technology
- Double super-heterodyne receiving system
- Two-line LCD display
- Auto mixing input function



- Squelch function (carrier, noise, tone)
- Usable frequencies scanning and vacant channel search funtion
- Compact half-rack size body



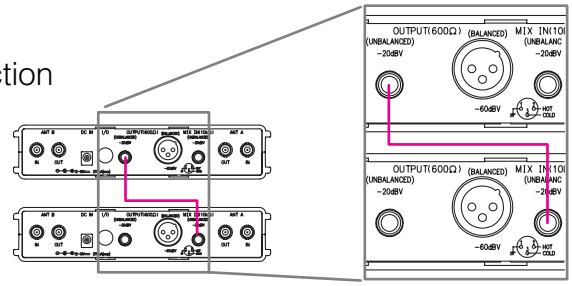
- 6 points audio level meter for microphone sensitivity adjustment
- Compander circuitry for minimizing ambient noise
- Antenna distribution output
- Whip antenna × 2



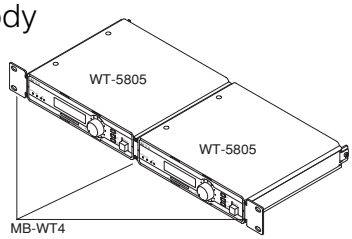
- Low-battery indicator (wireless microphone's battery voltage becomes low)

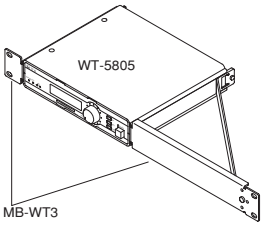
WT-5805

- Phased Lock Loop (PLL) synthesis operation
- Four 16-channel banks of circuit frequencies
- TOA space diversity technology
- Double super-heterodyne receiving system
- Two-line LCD display
- Auto mixing input function



- Squelch function (carrier, noise, tone)
- Usable frequencies scanning and vacant channel search funtion
- Compact half-rack size body

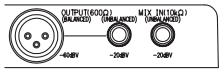




- 6 points audio level meter for microphone sensitivity adjustment
- Compander circuitry for minimizing ambient noise
- Whip antenna × 2
- Low-battery indicator (wireless microphone's battery voltage becomes low)

WT-5810

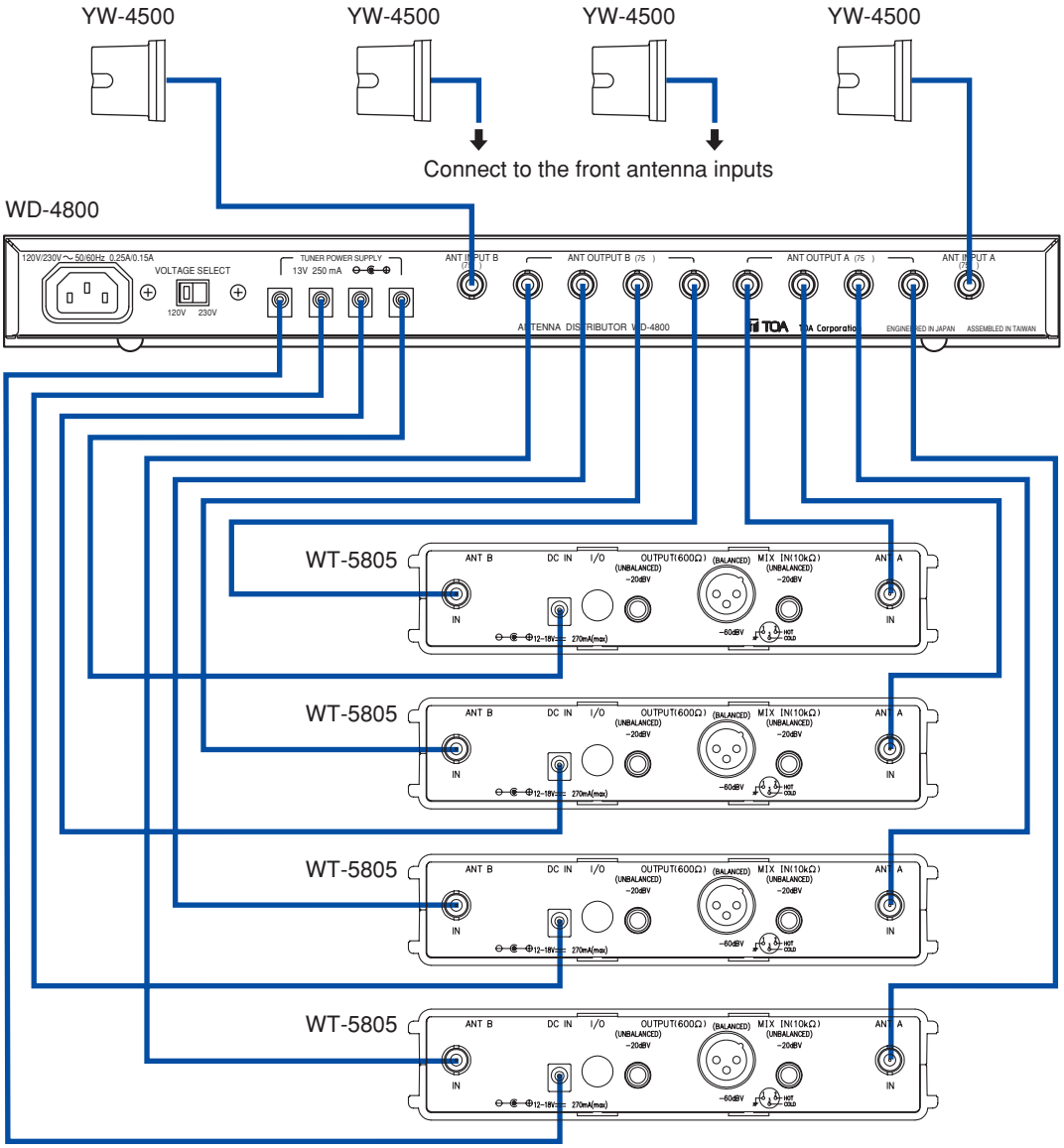
- Phased Lock Loop (PLL) synthesis operation
- 16 selectable channel frequencies
- TOA space diversity technology
- Double super-heterodyne receiving system
- Auto mixing input function



- Squelch function (carrier, noise, tone)
- Usable frequencies scanning and vacant channel search function
- Compact portable design
- Compander circuitry for minimizing ambient noise
- Rod antenna × 2
- Balanced output (XLR connector) and phone jack output
- Low-battery indicator (wireless microphone's battery voltage becomes low)

WD-4800

- 2 antenna inputs and 4 distributed outputs
- 2 inputs per antenna which are mixed for output (when 2 antennas are set up in a large room)
- Supplies power to the antenna
- Compact 19" rack-mount design



YW-4500

- UHF wireless dipole indoor antenna
- Wall mounted
- Power supplied by tuner unit (WT-5800, WT-5805, WD-4800) through coaxial cable
- Built-in RF signal booster
- Attenuation switch helps minimize noise and any interference

Cable Type	Extermal Diameter	Max. Length
RG-6/U	8.4mm	35m
RG-11/U	10.3mm	50m

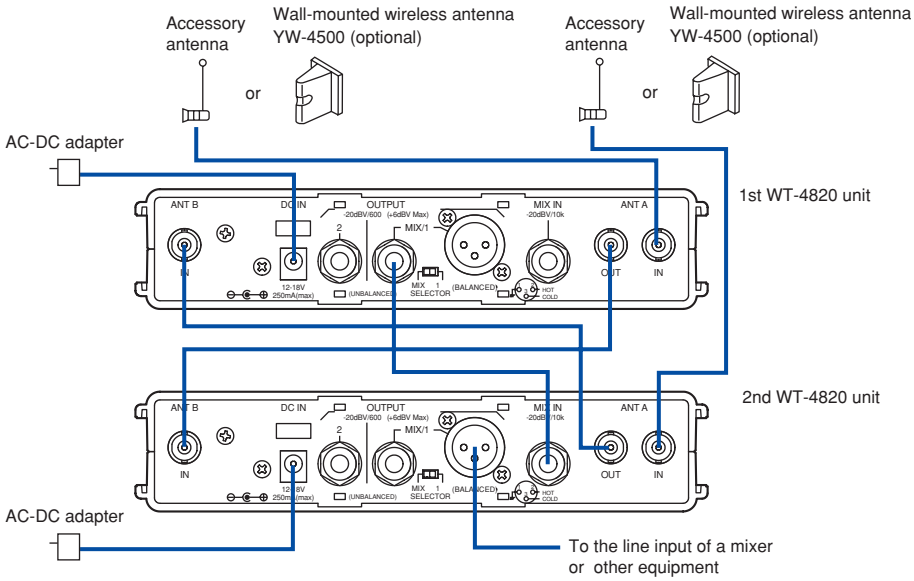
WTU-4800

- PLL synthesis double superheterodyne diversity tuner module
- Designed for use with UHF wireless equipment
- Squelch function mutes output to reduce noise
- Includes compander noise reduction to cut ambient RF noise
- Compact dimensions

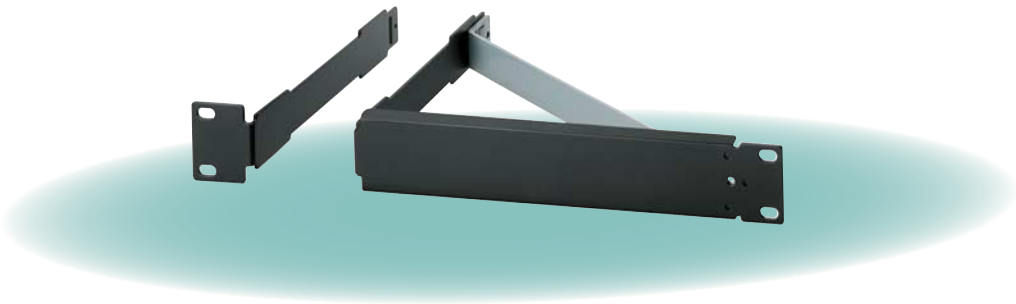
WT-4820

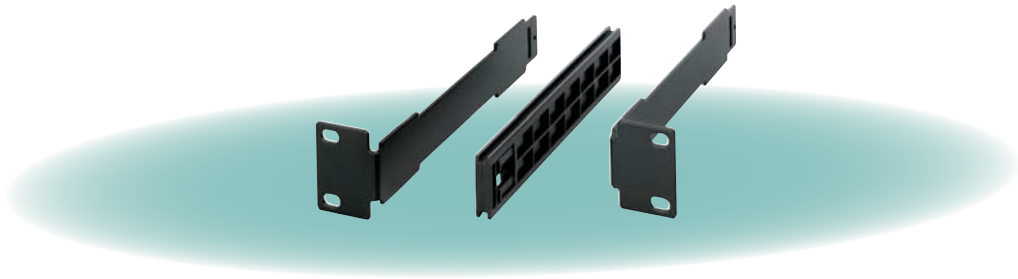
- 16 selectable channel frequencies
- Antenna cascade output function (parallel connection possible for linking two WT-4820 units)
- Auto mixing input function
- Tuner unit (WTU-4800) connections accessible from the front (even if rack mounted, the front panel is easily opened)

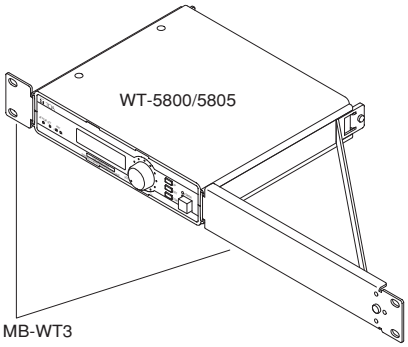
- TOA Space Diversity technology
- Mix output/tuner 1 output (selectable), tuner 2 has 2 outputs
- Whip antenna × 2
- Compact 19" rack-mount design
- External antenna input

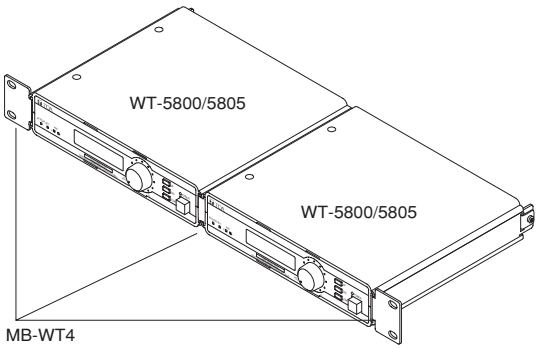


MB-WT3/MB-WT4









Using in combination with existing products

Wireless Microphone
WM-4200
WM-4210
WM-4220
WM-4300
WM-4310
WM-4310H
WM-4310A

Wireless Microphone
WM-5220
WM-5320
WM-5320H
WM-5320A

Compatible

Wireless Tuner
WT-4800
WT-4810
WT-4820 (WTU-4800)

Wireless Tuner
WT-5800
WT-5805
WT-5810

Existing Lineup	New Lineup
WM-4200 →	WM-4200
WM-4210 →	WM-4210
WM-4220 →	WM-4220
WM-4300 →	WM-4300
WM-4310	—
WM-4310H	—
WM-4310A	—
WT-4800	—
WT-4810	—
WT-4820 (WTU-4800) →	WT-4820 (WTU-4800)
	WM-5220
	WM-5320
	WM-5320H
	WM-5320A
	WT-5800
	WT-5805
	WT-5810
WD-4800 →	WD-4800

Frequency Table (North America)

For U.S.A/Canada

BANK / CHANNEL	A01				B01			
	1	2	3	4	1	2	3	4
0	692.125	692.325	692.525	692.725	722.125	722.325	722.525	722.725
1	692.475	692.675	692.875	693.075	722.475	722.675	722.875	723.075
2	692.925	693.125	693.325	693.525	722.925	723.125	723.325	723.525
3	693.475	693.675	693.875	694.075	723.475	723.675	723.875	724.075
4	694.125	694.325	694.525	694.725	724.125	724.325	724.525	724.725
5	695.025	695.225	695.425	695.625	725.025	725.225	725.425	725.625
6	696.475	696.675	696.875	697.075	726.475	726.675	726.875	727.075
7	698.225	698.425	698.625	698.825	728.225	728.425	728.625	728.825
8	700.125	700.325	700.525	700.725	730.125	730.325	730.525	730.725
9	702.775	702.975	703.175	703.375	732.775	732.975	733.175	733.375
A	703.875	704.075	704.275	704.475	733.875	734.075	734.275	734.475
B	706.625	706.825	707.025	707.225	736.625	736.825	737.025	737.225
C	709.725	709.925	710.125	710.325	739.725	739.925	740.125	740.325
D	713.925	714.125	714.325	714.525	743.925	744.125	744.325	744.525
E	716.125	716.325	716.525	716.725	746.125	746.325	746.525	746.725
F	720.975	721.175	721.375	721.575	750.975	751.175	751.375	751.575

*Group B01 is only sold in Canada.

* WT-5810 uses 16 channels of Bank 1 only.

Frequency Table (Europe)

For Europe

BANK / CHANNEL	C01				D01			
	1	2	3	4	1	2	3	4
0	798.625	799.050	799.475	799.900	837.275	837.325	837.375	837.425
1	798.975	799.400	799.825	800.250	839.725	839.775	839.825	839.875
2	799.425	799.850	800.275	800.700	841.925	841.975	842.025	842.075
3	799.975	800.400	800.825	801.250	846.775	846.825	846.875	846.925
4	800.625	801.050	801.475	801.900	850.225	850.275	850.325	850.375
5	801.525	801.950	802.375	802.800	852.975	853.025	853.075	853.125
6	802.975	803.400	803.825	804.250	854.075	854.125	854.175	854.225
7	804.725	805.150	805.575	806.000	856.725	856.775	856.825	856.875
8	806.625	807.050	807.475	807.900	858.625	858.675	858.725	858.775
9	809.275	809.700	810.125	810.550	860.375	860.425	860.475	860.525
A	810.375	810.800	811.225	811.650	861.825	861.875	861.925	861.975
B	813.125	813.550	813.975	814.400	862.725	862.775	862.825	862.875
C	816.225	816.650	817.075	817.500	863.375	863.425	863.475	863.525
D	820.425	820.850	821.275	821.700	863.925	863.975	864.025	864.075
E	822.625	823.050	823.475	823.900	864.375	864.425	864.475	864.525
F	827.475	827.900	828.325	828.750	864.725	864.775	864.825	864.875

For U.K

BANK / CHANNEL	D02			
	1	2	3	4
0	854.900	858.975	846.900	842.325
1	855.275	859.500	847.275	843.525
2	855.900	863.725	847.900	844.450
3	856.175	846.425	848.175	846.025
4	856.575	846.950	848.575	848.478
5	857.625	847.925	849.625	863.025
6	857.950	849.575	849.950	864.300
7	858.200	850.050	850.200	864.650
8	858.650	850.050	850.650	863.000
9	860.400	850.050	850.975	863.475
A	860.900	850.050	851.500	864.350
B	861.200	850.050	852.400	864.725
C	861.550	850.050	852.900	842.750
D	861.750	850.050	853.200	849.500
E	861.750	850.050	853.550	853.375
F	861.750	850.050	853.750	853.375

* WT-5810 uses 16 channels of Bank 1 only.

Frequency Table (Asia)

For Korea / **For New Zealand**

BANK / CHANNEL	B02				C02			
	1	2	3	4	1	2	3	4
0	740.125	740.175	740.225	740.275	819.125	819.175	819.225	819.275
1	740.475	740.525	740.575	740.625	819.475	819.525	819.575	819.625
2	740.925	740.975	741.025	741.075	820.125	820.175	820.225	820.275
3	741.475	741.525	741.575	741.625	820.875	820.925	820.975	821.025
4	742.125	742.175	742.225	742.275	821.325	821.375	821.425	821.475
5	743.025	743.075	743.125	743.175	822.175	822.225	822.275	822.325
6	744.475	744.525	744.575	744.625	823.275	823.325	823.375	823.425
7	746.225	746.275	746.325	746.375	823.825	823.875	823.375	823.425
8	748.125	748.175	748.225	748.275	823.825	823.875	823.375	823.425
9	750.775	750.825	750.875	750.925	823.825	823.875	823.375	823.425
A	751.875	750.825	750.875	750.925	823.825	823.875	823.375	823.425
B	751.875	750.825	750.875	750.925	823.825	823.875	823.375	823.425
C	751.875	750.825	750.875	750.925	823.825	823.875	823.375	823.425
D	751.875	750.825	750.875	750.925	823.825	823.875	823.375	823.425
E	751.875	750.825	750.875	750.925	823.825	823.875	823.375	823.425
F	751.875	750.825	750.875	750.925	823.825	823.875	823.375	823.425

For Australia / **For Thailand**

BANK / CHANNEL	C03				C04			
	1	2	3	4	1	2	3	4
0	819.875	819.775	819.675	819.575	794.250	794.300	794.350	794.400
1	819.525	819.425	819.325	819.225	794.600	794.650	794.700	794.750
2	819.075	818.975	818.875	818.775	795.050	795.100	795.150	795.200
3	818.525	818.425	818.325	818.225	795.600	795.650	795.700	795.750
4	817.875	817.775	817.675	817.575	796.500	796.550	796.600	796.650
5	816.975	816.875	816.775	816.675	797.700	797.750	797.800	797.850
6	815.525	815.425	815.325	815.225	799.250	799.300	799.350	799.400
7	813.775	813.675	813.575	813.475	800.900	800.950	801.000	801.050
8	811.875	811.775	811.675	811.575	801.600	801.650	801.700	801.750
9	809.225	809.125	809.025	808.925	803.350	803.400	803.450	803.500
A	806.475	806.375	806.275	806.175	804.450	804.500	804.550	804.600
B	803.375	803.275	803.175	803.075	804.450	804.500	804.550	804.600
C	802.275	802.175	802.075	801.975	804.450	804.500	804.550	804.600
D	800.075	799.975	799.875	799.775	804.450	804.500	804.550	804.600
E	800.075	799.975	799.875	799.775	804.450	804.500	804.550	804.600
F	800.075	799.975	799.875	799.775	804.450	804.500	804.550	804.600

* WT-5810 uses 16 channels of Bank 1 only.

Frequency Table (Asia)

For Hong Kong

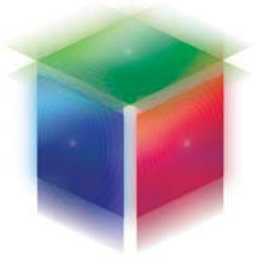
	D05			
BANK / CHANNEL	1	2	3	4
0	820.975	820.975	820.975	820.975
1	820.975	820.975	820.975	820.975
2	820.975	820.975	820.975	820.975
3	820.975	820.975	820.975	820.975
4	820.975	820.975	820.975	820.975
5	820.975	820.975	820.975	820.975
6	820.975	820.975	820.975	820.975
7	820.975	820.975	820.975	820.975
8	820.975	820.975	820.975	820.975
9	820.975	820.975	820.975	820.975
A	820.975	820.975	820.975	820.975
B	820.975	820.975	820.975	820.975
C	820.975	820.975	820.975	820.975
D	820.975	820.975	820.975	820.975
E	820.975	820.975	820.975	820.975
F	820.975	820.975	820.975	820.975

* WT-5810 uses 16 channels of Bank 1 only.

Frequency Table (other regions)

BANK / CHANNEL	C06				C07			
	1	2	3	4	1	2	3	4
0	800.650	800.125	800.175	800.350	794.025	794.775	797.100	802.025
1	802.025	800.475	800.525	800.700	796.700	796.000	797.500	805.100
2	803.050	800.925	800.975	801.150	798.300	797.900	800.975	808.975
3	803.550	801.475	801.525	801.700	800.225	799.000	804.700	812.700
4	804.800	802.375	802.425	802.600	805.500	808.225	806.300	814.300
5	806.950	804.475	804.525	804.700	807.000	813.500	810.775	815.000
6	808.575	806.125	806.175	806.350	812.000	813.900	816.225	820.700
7	809.225	808.125	808.175	808.350	821.900	820.000	816.975	829.100
8	811.725	809.325	809.375	809.550	823.000	821.500	818.775	823.000
9	812.850	810.875	810.925	811.100	824.225	822.300	821.100	824.225
A	813.750	811.975	812.025	812.200	826.025	824.975	802.025	826.025
B	801.100	812.625	812.675	812.850	826.775	828.700	805.100	826.775
C	801.925	814.000	814.050	798.300	802.775	814.300	808.975	802.775
D	802.325	814.350	814.400	800.225	805.900	815.000	812.700	805.900
E	806.850	814.800	814.850	805.500	818.025	820.700	824.975	818.025
F	810.100	815.350	815.400	807.000	829.900	829.100	828.700	829.900

BANK / CHANNEL	D03				D04	D05
	1	2	3	4	1	1
0	854.175	863.125	854.800	841.250	863.125	841.250
1	854.525	863.475	855.450	841.750	863.475	841.750
2	854.975	863.925	856.700	843.250	863.925	843.250
3	856.175	864.475	858.175	848.750	864.475	848.750
4	857.175	863.275	859.900	849.750	863.275	849.750
5	858.075	863.625	861.000	842.250	863.625	842.250
6	859.475	864.075	861.900	842.750	864.075	842.750
7	860.575	864.625	863.525	849.250	864.625	849.250
8	861.275	863.375	864.075	850.250	863.375	850.250
9	861.875	863.725	864.525	851.750	863.725	851.750
A	861.500	864.175	864.875	850.750	864.175	850.750
B	860.375	864.725	854.225	851.250	864.725	851.250
C	857.250	863.500	854.575	863.500	863.500	863.500
D	856.000	863.850	855.025	863.850	863.850	863.850
E	855.500	864.300	855.575	864.300	864.300	864.300
F	854.650	864.850	857.200	864.850	864.850	864.850



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