BOSS

WIRELESS SYSTEM WS-20/20M

Owner's Manual

dbx NOISE REDUCTION

Information

- Please use this AC Adaptor only with the specified device.
- Please use the AC Adaptor of appropriate voltage (120, 220 or 240) depending on the voltage system in your country.
- When the device is not used for a long period, be sure to disconnect the AC Adaptor (Power Supply Unit) from the wall outlet.
- When you need repair service, call your local Roland Service Station or the authorized Roland distributor in your country as shown below.

U. S. A.
Roland Corp US
7200 Dominion Circle
Los Angeles, CA. 90040 - 3647
U. S. A.
☎(213)685 - 5141

CANADA
Roland Canada Music Ltd.
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Richmond B. C., V6V 2E4
CANADA
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Quebec H4R 2C1
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Mississauga, Ontario L4W 2P5
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Roland Corporation
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NEW ZEALAND
☎(09)398 - 715

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Roland(UK)Ltd.
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West Cross Centre, Brentford,
Middlesex TW8 9EZ,
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☎(01)568 - 4578

WEST GERMANY
Roland Elektronische
Musikinstrumente
Handelsgesellschaft mbH.
Oststrasse 96,
2000 Norderstedt
WEST GERMANY
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BELGIUM/HOLLAND/ LUXEMBOURG
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BELGIUM
☎014 - 58 45 39

DENMARK
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DK - 1023 Copenhagen K.
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☎31 - 95 31 11

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☎08 - 702 00 20

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SF - 02101 Espoo
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20151 Milano
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☎02 - 3086849

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Musitronic AG
Gerberstrasse 5, CH - 4410
Liestal
SWITZERLAND
☎061/921 16 15

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102, Avenue Jean - Jaures
69367 Lyon Cedex 07
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☎(7)858 - 54 60

Musikengro
(Paris Office)
Centre Region Parisienne
41 rue Charles - Fourier,
94400 Vitry s/Seinc
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☎(1)4680 86 62

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Roland Electronics de España S. A.
Bolivia 239
08020 Barcelona
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☎93 - 308 - 1000

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E. Dematte &Co.
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A - 6021 Innsbruck Box 591
AUSTRIA
☎43(05222)63 4510

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2 Fidiou Str., 106 78
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GREECE
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PORTUGAL
Casa Caius Instrumentos Musicais Lda.
Rua de Santa Catarina 131
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Thank you for purchasing the BOSS WS-20/WS-20M Wireless System.

To make the best use of the WS-20/WS-20M, and to keep it in good condition, please read this manual carefully.

■FEATURES

○ The WS-20 is a wireless system that can be used not only for electric guitars, but for any kind of electronic musical instrument.

○ The WS-20M can also be directly connected to any microphone that has an XLR connector.

○ The WS-20/WS-20M adopt a real-time diversity reception system for stable reception, free from dead points.

○ The WS-20/WS-20M use the 170MHz frequency band to minimize interference from external instruments.

■IMPORTANT NOTES

When using an AC adaptor, be sure that it is one supplied by the manufacturer. Use of any other power adaptor could result in damage, malfunction, or electric shock.

[Power Supply]

- When making any connections with other devices, always turn off the power to all equipment first; this will help prevent damage or malfunction.
- Do not use this unit on the same power circuit with any device that will generate line noise, such as a motor or variable lighting system.
- The power supply required for this unit is shown on its nameplate. Ensure that the line voltage of your installation meets this requirement.
- Avoid damaging the power cord; do not step on it, place heavy objects on it etc.
- If the unit is to remain unused for a long period of time, unplug the power cord.
- When replacing batteries, be sure to follow the instructions in "Battery Replacement" (see page 15).

[Placement]

- Do not subject the unit to temperature extremes (eg. direct sunlight in an enclosed vehicle). Avoid using or storing the unit in dusty or humid areas or areas that are subject to high vibration levels.
- Using the unit near power amplifiers (or other equipment containing large transformers) may induce hum.
- This unit may interfere with radio and television reception. Do not use this unit in the vicinity of such receivers.
- Do not expose this unit to temperature extremes (eg. direct sunlight in an enclosed vehicle can deform or discolor the unit) or install it near devices that radiate heat.

[Maintenance]

- For everyday cleaning wipe the unit with a soft, dry cloth (or one that has been slightly dampened with water). To remove stubborn dirt, use a mild neutral detergent. Afterwards, be sure to wipe the unit thoroughly with a soft, dry cloth.
- Never use benzene, thinners, alcohol or solvents of any kind, to avoid the risk of discoloration and/or deformation.

[Additional Precautions]

- Protect the unit from strong impact.
- Do not allow objects or liquids of any kind to penetrate the unit. In the event of such an occurrence, discontinue use immediately. Contact qualified service personnel as soon as possible.
- Never strike or apply strong pressure to the display.
- Should a malfunction occur (or if you suspect there is a problem) discontinue use immediately. Contact qualified service personnel as soon as possible.

[Changing Batteries]

- When replacing batteries, be sure to maintain correct polarity.
- Remove the batteries whenever the unit is not going to be used for an extended period of time.

[Power on]

- This unit is equipped with a circuit protection device. A brief interval after power up is required before the unit will operate.

* This wireless system uses the same frequency bands as some TV broadcasts. Please make sure that you are not using the same frequencies as the TV broadcasts in your area.

TV Channel (US)	WS-20/WS-20M Channel
Channel 7 (174 to 180MHz)	Channel 1 (176.2MHz) Channel 2 (178.2MHz)
Channel 8 (180 to 186MHz)	Channel 3 (182.4MHz) Channel 4 (184.6MHz)
Channel 9 (186 to 192MHz)	Channel 5 (188.6MHz) Channel 6 (189.8MHz)
Channel 10 (192 to 198MHz)	Channel 7 (193.8MHz) Channel 8 (195.2MHz) Channel 9 (196.2MHz)
Channel 11 (198 to 204MHz)	Channel 10 (200.2MHz)

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1. The Outline of the Diversity System

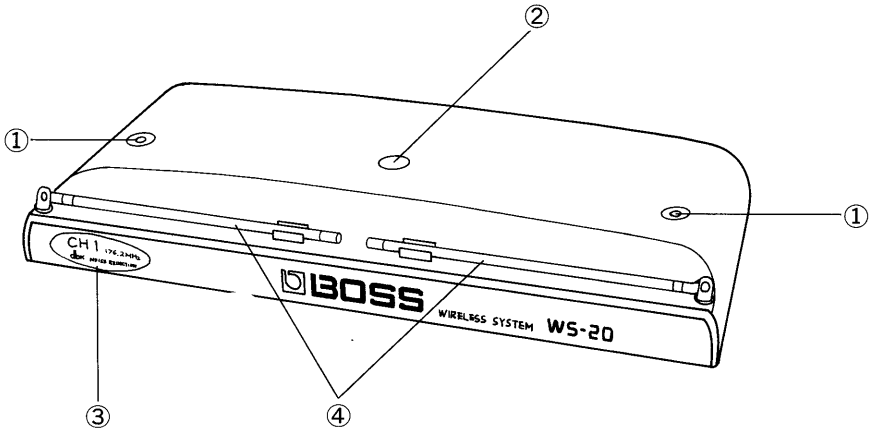
If one receiver receives the signals from the wireless transmitter, noise or interference may be generated when the transmitter is moved. This may occur even when there is only a short distance between the transmitter and the receiver. This happens because the radio waves are reflected by the walls or ceiling and interfere with each other, creating a dead point where the level is extremely low. Technically speaking, this can be resolved by moving the receiver to the position where radio waves do not interfere with each other, but such is not the case in practice.

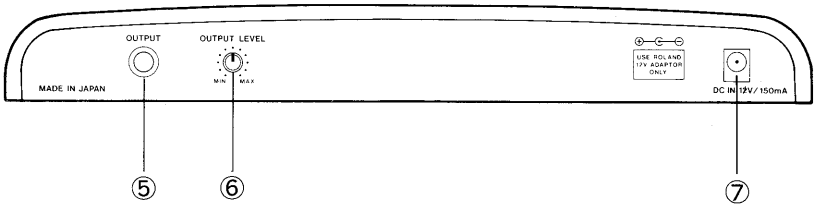
The noise or interference can be reduced by using two receivers simultaneously and then selecting the higher received RF level. A receiver of the diversity system is based on this concept and therefore features two receivers in a single housing.

The output is automatically selected depending on the received RF level.

2. Panel Description

☐ Receivers





① Diversity Indicators A/B
The indicators show which receiver (A or B) is currently working.

② Power/RF Signal Indicator
This indicator is lit (or flashes) when the supplied AC adaptor is connected, showing that the unit is on. When strong radio waves are being received, the indicator is constantly lit. When the radio waves are weaker, the indicator flashes.

③ Receive Channel Seal
This seal indicates the frequency and channel on which radio waves are received.

④ Rod Antennas A and B
These antennas are used for receiving the radio waves from the transmitter. When you use the antennas, extend them completely.

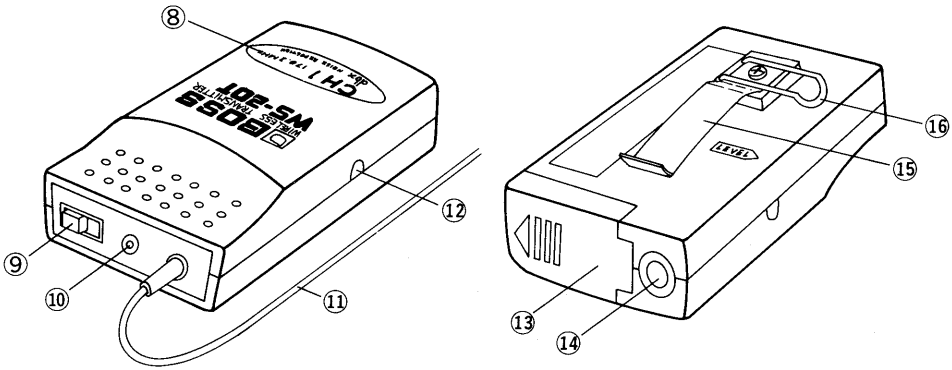
⑤ Output Jack
The received signals are output through this jack.

⑥Output Level Control Knob
This knob controls the output level.

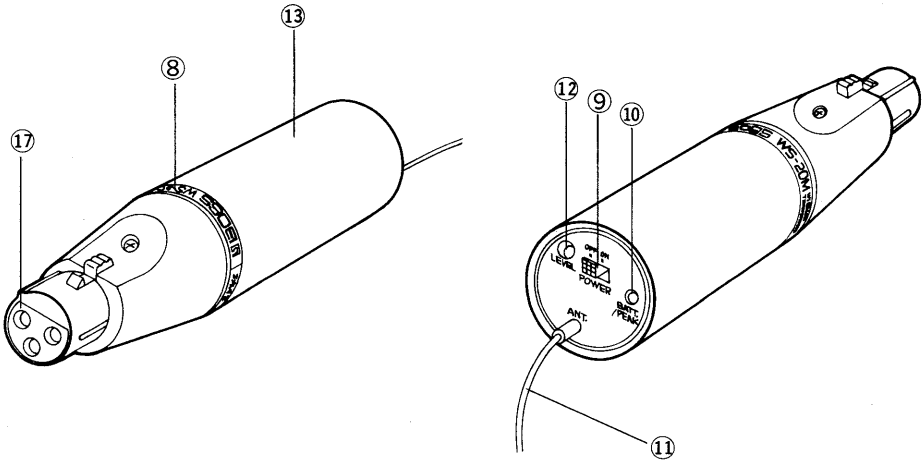
⑦ AC Adaptor Jack
Connect the supplied AC adaptor to this jack.

□ Transmitter

≪WS-20T≫



≪WS-20M≫



⑧ Transmit Channel Seal
This seal indicates the frequency and channel on which radio waves are transmitted.

⑨ Power Switch
This switch turns the unit on and off.

⑩ Battery/Peak Indicator
This serves as a battery check for the transmitter. (See page 15.) It lights when the input signal is too high.

⑪ Transmit Antenna
This antenna is for transmitting signals. When you wish to use it, extend it completely.

⑫ Level Control Knob
This knob sets the input signal level.

⑬ Battery Cover
This is the cover for the battery box.

⑭ Input Jack
Connect an electric guitar or any electronic instrument to this jack.

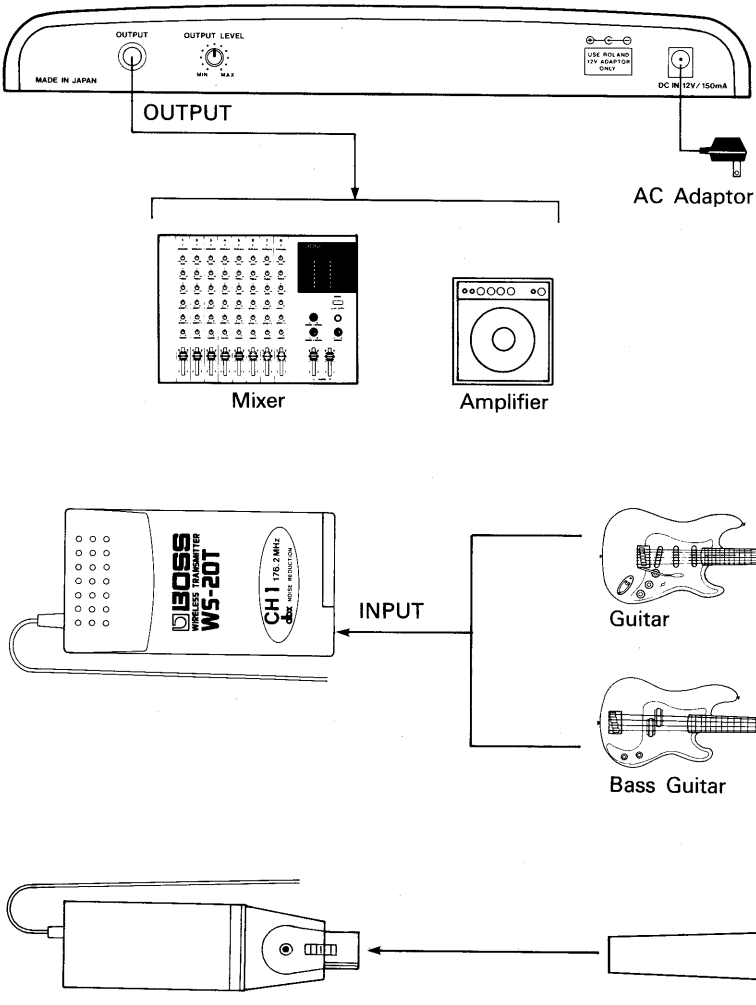
⑮ Belt Clip
Use this clip to attach the transmitter to a belt or strap.

⑯ Cord Clamp
This clamp can be used for securing the cord connected to the Input Jack.

⑰ XLR Connector
Connect any standard microphone to this connector.

3. Connections and Installation

a. Connections



* When connecting or disconnecting a cord, be sure that the AC adaptor is not connected to the unit.

b. Notes on installation

◇ Where to place the receiver

* When you use the rod antennas, extend them both straight up.

* Keep the receiver away from the floor or walls as much as possible (this will reduce the likelihood of dead points occurring).

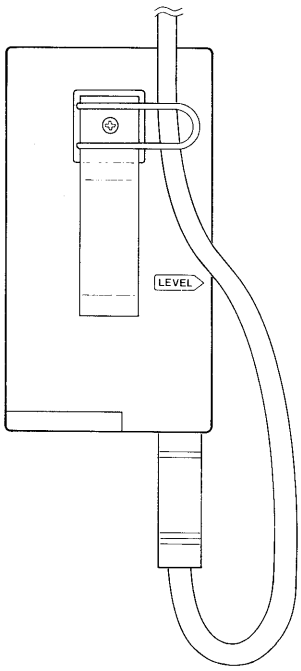
* Place the receiver where it is always visible (even when you move).

* Make sure that the Power/Signal Indicator is constantly lit.
When the radio waves becomes weak, the indicator flashes, and unwanted noise may result.

* Using this unit near a digital effect unit, computer or lighting system may cause noise interference. Be sure to keep it away from such devices. Use an independent power jack for the receiver, since noise may also be conveyed through a power jack.

◇ Where to place the transmitter

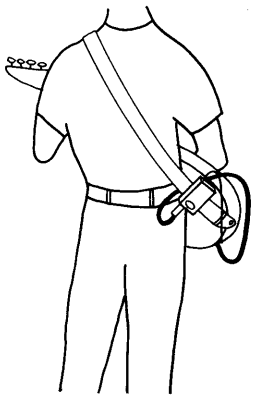
* Firmly attach the cord connected to the Input Jack to the Cord Clamp. (WS-20T)



* Be sure to fully extend the transmitter's antenna. If it is not, the audio quality may be seriously compromised.

* Attach the transmitter to a belt or strap. Be sure to handle the transmitter gently. (WS-20T)





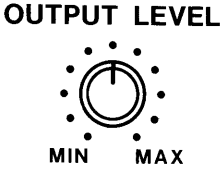
4. Operation

a. Procedure

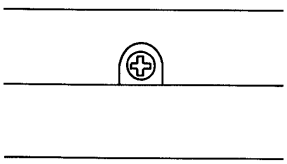
(1) When you have finished all connections (such as to an amplifier), connect the AC adaptor to the receiver and switch the transmitter on.

* Before you connect the AC adaptor to the receiver, set the volume of the amplifier or mixer to the minimum level. When you switch the transmitter on, set the Output Level Control Knob on the receiver to the lowest (MIN) position.

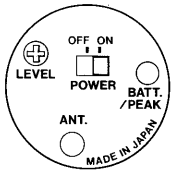
(2) Set the output level with the Output Level Control Knob.
Normally it should be set to the center-click position.



(3) Adjust the Level Control Knob on the transmitter so that the Battery/Overload Indicator will light up occasionally when in use.



WS-20T



WS-20M

* If the Battery/Overload Indicator on the transmitter lights even when no signal is being sent, the battery is low and needs replacing.
* Changing the Level Control Knob on the transmitter will affect the output level of the receiver. Readjust the Output Level Knob.

b. Battery Replacement

◇ When to replace the battery

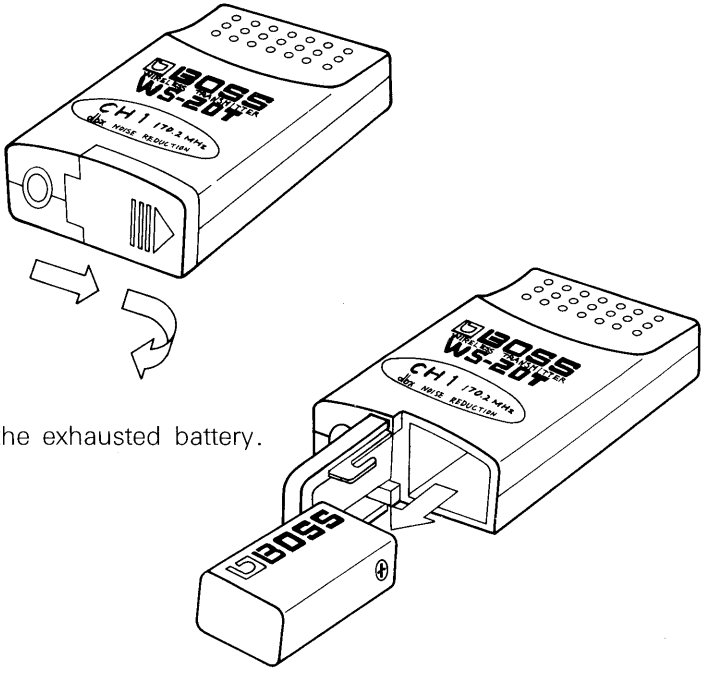
Normally, the Battery/Overload Indicator lights momentarily when the transmitter is switched on. When the battery is weak, the indicator remains lit. When the battery is completely exhausted, the indicator will go out. If the indicator is continually lit even when no signal is being transmitted, replace the battery immediately.

* The Battery/Overload Indicator also lights continually when the input signal is too high. Please check the battery when no signal is being transmitted.

◇ Battery Replacement

≪**WS-20T**≫

(1) Push and slide the battery cover at the same time to open it.



(2) Remove the exhausted battery.

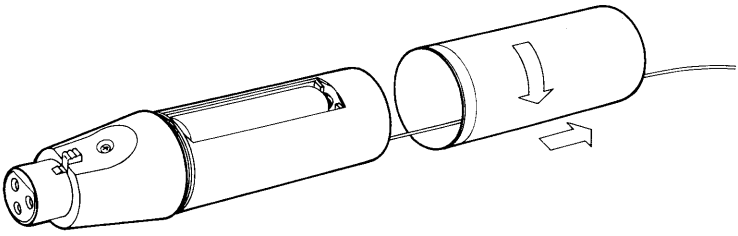
(3) Insert a new battery.

* Make sure that the polarity of the battery (+ / −) is correct. Inserting the battery incorrectly is very dangerous, since it may become hot.

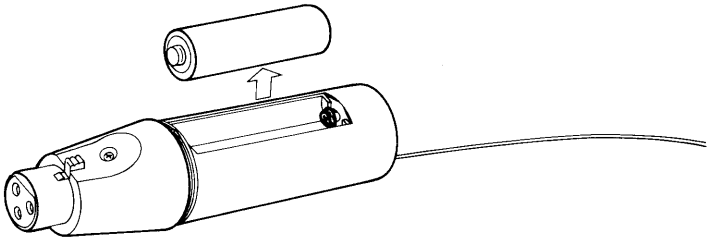
(4) Replace the battery cover securely.

≪WS-20M≫

(1) Rotate the battery cover and remove it.



(2) Remove the exhausted battery.



(3) Insert a new battery.

* Make sure that the polarity of the battery (+ / −) is correct. Inserting the battery incorrectly is very dangerous, since it may become hot.

(4) Replace the battery cover securely.

c. Note on using the wireless system WS-20/WS-20M

* Do not use more than one wireless system on the same channel (frequency) at a time.

* Do not use the wireless system near a radio station transmitter or airport.

* Be sure to use the transmitter and receiver together. If you use them with a different wireless systems, they will not work properly even when they use the same frequencies.

* Using more than one wireless system at the same time may cause jamming (interference). This may be rectified by repositioning the receivers away from each other.

* Do not modify the antenna on the transmitter. Even making a slight modification to the antenna (or using other antenna) is punishable under law.

* The wireless system uses high frequencies and therefore may cause radio wave interference. Be sure to use it where TV or other systems will not be disturbed.

* If use of this system interferes with radio station transmissions, you are required to immediately discontinue use of the wireless system until a reasonable solution can be found.

5. Specifications

<WS-20T+WS-20R>

[Overall Characteristics]

Frequency Response: 30Hz to 12kHz (±3dB)
Audio Distortion: Less than 1.0% (±6kHz deviation)
Residual Noise: Less than −94dBm (IHF-A)
Transmission Gain: 0dB
Acceptable Temperatures: 0°C to +40°C
Supplied Accessories: AC Adaptor
ACG-120 (12449539)
-220 (12449540)
-240A (12449541)
-240E

[Transmitter : WS-20T]

Transmitted Signal Type: FM
Transmission Frequencies:

Channel 1: 176.2MHz	Channel 6: 189.8MHz
Channel 2: 178.2MHz	Channel 7: 193.8MHz
Channel 3: 182.4MHz	Channel 8: 195.2MHz
Channel 4: 184.6MHz	Channel 9: 196.2MHz
Channel 5: 188.6MHz	Channel 10: 200.2MHz

(Signal transmitted is one from the above 10)

Oscillator Type: Crystal Controlled oscillation
Transmission Power: Less than 50mW
Antenna: Internal Antenna
Controls: Power Switch, Level
Indicator: Battery/ Overload
Input Jack: Standard Phone jack
Input Impedance: 1MΩ
Maximum Input Level: +4dBm/1kHz
Time Continuous operation is possible (at 25°C):
5 or more hours (BOSS manganese battery)
16 or more hours (BOSS alkaline battery)
Battery used: 6AM6 (alkaline), 6F22 (manganese); 9V
Current Draw: 30mA
Weight: 120g/ 4oz (including battery and antenna)
Dimensions: 52 (W) × 97 (H) × 31 (D) mm
2-1/16" (W) × 3-13/16" (H) × 1-1/4" (D)

<WS-20M+WS-20R>

[Overall Characteristics]

Frequency Response: 40Hz to 12kHz (±3dB)
Audio Distortion: Less than 1.0% (±6kHz deviation)
Residual Noise: Less than −68dBm (IHF-A)
Transmission Gain: 40dB
Acceptable Temperatures: 0°C to +40°C
Supplied Accessories: AC Adaptor
ACG-120 (12449539)
-220 (12449540)
-240A (12449541)
-240E

[Transmitter : WS-20M]

Transmitted Signal Type: FM
Transmission Frequencies:

Channel 1: 176.2MHz	Channel 6: 189.8MHz
Channel 2: 178.2MHz	Channel 7: 193.8MHz
Channel 3: 182.4MHz	Channel 8: 195.2MHz
Channel 4: 184.6MHz	Channel 9: 196.2MHz
Channel 5: 188.6MHz	Channel 10: 200.2MHz

(Signal transmitted is one from the above 10)

Oscillator Type: Crystal Controlled oscillation
Transmission Power: Less than 50mW
Antenna: Internal Antenna
Controls: Power Switch, Level
Indicator: Battery/ Overload
Input : XLR Connector
Input Impedance: 5.6kΩ
Maximum Input Level: -5dBm/1kHz
Time Continuous operation is possible(at 25°C):
8 or more hours (manganese battery)
17 or more hours (alkaline battery)
Battery used: LR-6(alkaline), R-6(manganese); 1.5V
Current Draw: 70mA
Weight: 100g/ 4oz(including battery and antenna)
Dimensions: 33(Diameter)× 119(Length)mm
1-5/16"× 4-11/16"

[**Receiver**]

Received Signal Type: FM
Reception Frequencies:

Channel 1: 176.2MHz	Channel 6: 189.8MHz
Channel 2: 178.2MHz	Channel 7: 193.8MHz
Channel 3: 182.4MHz	Channel 8: 195.2MHz
Channel 4: 184.6MHz	Channel 9: 196.2MHz
Channel 5: 188.6MHz	Channel 10: 200.2MHz

(Signal received is one from the above 10)

Reception Method: Space Diversity
Receiver Type: Single Super-heterodyne
Local Oscillator Type: Crystal controlled oscillation (fo−10.7MHz)
Noise Reduction: dbx Type II
antennas: Two four-segment rod antenna
Reception Sensitivity: 15dBμV(S/N 60dB)
Reception Selectivity: ±80kHz
Control: Output Level
Indicators: Power/ RF signal, Diversity (two)
Output Impedance: 4kΩ
Jack: Output, AC adaptor
Power Source: 12V DC (With use of supplied AC Adaptor)
Current Draw: 150mA
Weight: 550g/ 1lb4oz (not including AC Adaptor)
Dimension: 270(W)×35(H)×121(D)mm
10-5/8"(W)× 1-3/8"(H)× 4-3/4"(D)
(Including rubber feet)

* In the interest of product improvement, the specifications of this unit are subject to change without prior notice.

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Products of Roland

2603053100 '90-7-C3-12SE