

Digital Wireless Transmitter

Operating Instructions

DWT-B03R

DWX
DIGITAL WIRELESS

WiDIF-HP
 Cross Remote

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Features

The DWT-B03R is a drip-resistant digital wireless transmitter featuring a highly durable yet compact and lightweight design. The unit is suitable for broadcast and ENG (electronic news-gathering) applications, as well as for musical and television video production.

What is DWX?

DWX refers to Sony's new digital wireless microphone system. The DWX series reflects Sony's extensive expertise in professional microphones and sound design. It represents a successful blend of Sony know-how, wireless technology renowned for stability, and cutting-edge digital audio technology.

In addition to realizing the high sound quality possible with a digital system, the DWX series supports multi-channel simultaneous operation, encrypted transmission, and metadata transmission for monitoring the status of multiple transmitters. Using a main link and a separate additional link, remote control of transmitters from the receiver is also possible. With its many advanced features, the system has the potential to revolutionize the workflow of professional applications.

What is WiDIF-HP?

WiDIF-HP (WiDIF: Wireless Digital Interface Format, HP: High Profile) is a wireless digital audio interface format developed by Sony.

It enables highly secure transmission with high sound quality and low system latency, and supports simultaneous multi-channel operation.

What is Cross Remote?

Cross Remote is a system that allows transmitters to be monitored and controlled from a receiver and the Wireless Studio control software installed on a computer connected to the receiver.

For example, the settings of a transmitter worn under clothing can be easily changed over the wireless link.

Compact and lightweight design

The unit is equipped with a magnesium-alloy casing, providing a body that is durable in addition to being compact and lightweight.

High sound quality and low latency

Low system latency of 1.2 ms is achieved when using codec MODE2.

Switch between four audio codec modes based on your operational needs.

For details, see "Audio Codec Mode Setting (CODEC MODE)" (page 13).

High drip resistance against sweat, rain, and sprays

The inside of the unit's casing includes packing, and the unit's connectors are drip resistant. These features provide the unit with a drip resistance equivalent to IPX4/IPX5 (according to Sony test conditions).

Lithium-ion battery for extended use

The NP-BX1 rechargeable battery pack (supplied) allows extended operation times of up to about 7 hours.

Simultaneous multi-channel operation

Simultaneous multi-channel operation is made possible with the 375-kHz interval channel plan.

Encrypted transmissions

AES 256-bit encryption allows for highly secure wireless transmissions.

Support for a wide range of audio input levels

For details, see "Audio Input Level Setting (INPUT LEVEL)" (page 13).

Switchable RF output power

For details, see "Transmission Power Setting (RF POWER)" (page 14) and "Maximum Transmission Power Setting (MAX RF POWER)" (page 14).

Digital low-cut filter

For details, see "Low-Cut Filter Setting (LCF)" (page 12).

Audio phase switch function

For details, see "Audio Phase Switch Function (AF PHASE)" (page 14).

Power sleep mode

For details, see "Power Save Setting (POWER SAVE)" (page 13).

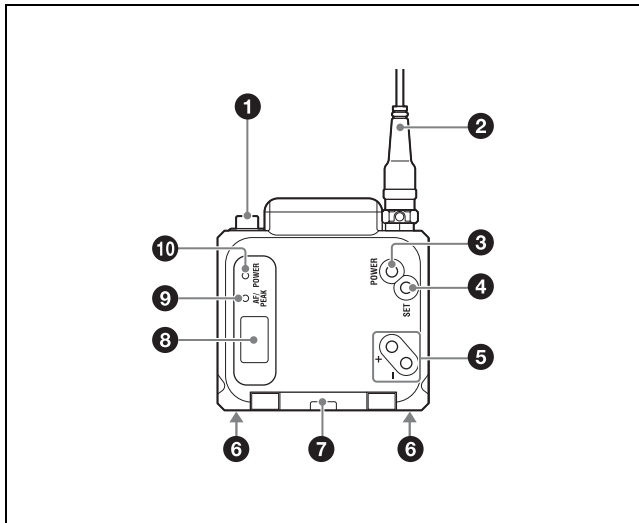
User settings function

For details, see "Settings Storage Function (USER MEMORY)" (page 15).

Organic EL (electroluminescent) display

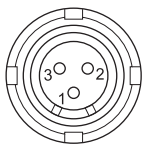
The quick response of the OLED (organic light-emitting diode) display enables real-time operating conditions to be displayed clearly and accurately.

Parts Identification



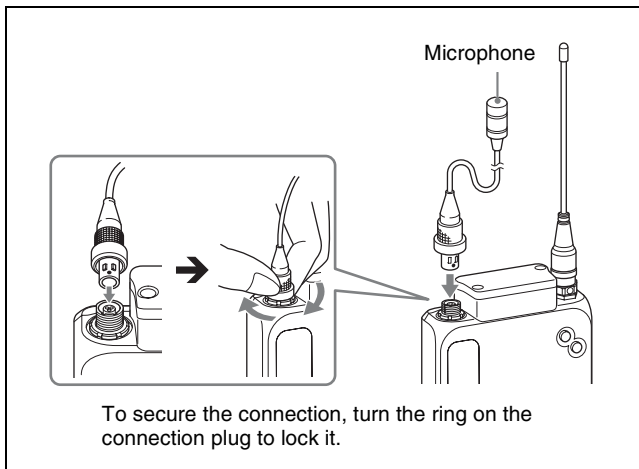
1 Audio input connector (mini 3-pin with lock)

Connects to a lavalier microphone.



1: GND
2: +5.2 V (output)
3: Hot +5.2 V

Connecting the microphone



2 Antenna

3 POWER button

Turns the unit on or off.

Hold down the button for 1 second or longer to turn the unit on. To turn the unit off, hold down the button until the POWER indicator turns off.

4 SET button

Allows you to adjust the displayed function settings and apply the adjusted values.

Holding down the SET button while turning the unit on turns the unit on without sending a signal.

5 + and – buttons

Selects the functions or values shown on the display. Holding down the – button while turning the unit on activates the pairing operation for the wireless remote control function.

6 Battery charger connector

Connects to the BC-DWX1 battery charger (not supplied), and allows you to charge the lithium-ion battery inserted in the unit.

7 Battery compartment cover

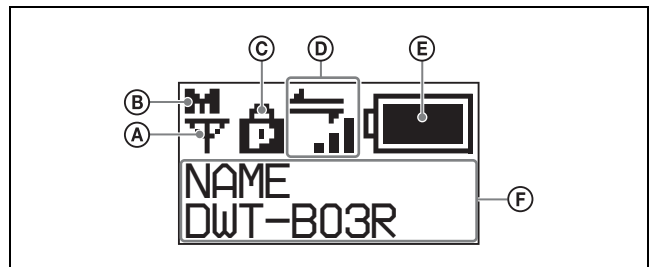
Insert the NP-BX1 rechargeable battery pack (supplied) here.

For safety, use only the Sony battery packs and AC adaptors listed below.

- NP-BX1

For details on how to insert batteries, see “Power Supply” (page 5).

8 Display



A RF transmission indicator

Indicates the current transmission status.

- ☎ : Currently transmitting.
- : RF transmission stopped.

B RF transmission power indicator

Indicates the current transmission power setting. You can change the setting with the RF transmission power setting function.

H: Transmitting at 25 mW.

M: Transmitting at 10 mW.

L: Transmitting at 2 mW.

C Lock indicator

Indicates whether the accidental operation locks are enabled. Nothing is displayed when the lock function is disabled.

: Operation of the POWER button is locked.

: Changes to the settings are locked.

: Operation of the POWER button and changes to the settings are locked.

For details, see “Lock Function (LOCK)” (page 12).

D Cross Remote condition indicator

Indicates the signal transmission condition of the wireless remote control function (4 levels).

- : Good transmission.

- ⚡ : Somewhat good transmission.
- ⚡ : Somewhat poor transmission.
- ⚡ : Poor transmission.
- ⚡ : Unable to communicate with paired receiver.

When the wireless remote control function is disabled, this indicator does not appear.

Ⓔ Remaining battery indicator

Indicates the remaining battery charge.

For details, see “Remaining battery indicator” (page 6).

Ⓕ Menu display area

Displays the status of the various functions. To cycle through the functions, press the + and – buttons.

For details, see “Menu Settings” (page 11).

⑨ AF (audio input level) / PEAK indicator

Lights green when the audio signal input is stronger than the reference level.

Lights red as a warning of excessive input when the audio signal input is 3 dB below the level at which distortion begins.

⑩ POWER indicator

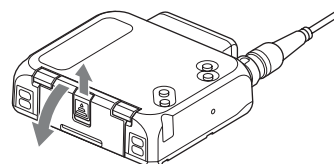
Lights green when the unit is turned on. This blinks when the battery charge is low.

Power Supply

The unit can operate on the lithium-ion battery continuously for about 7 hours at 25 °C (77 °F).

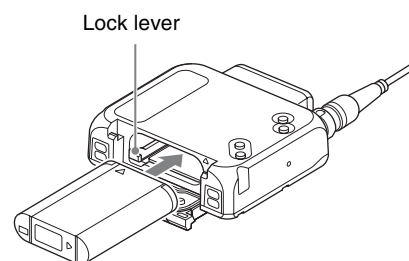
Inserting the Battery

- 1 Slide the tab at the center of the unit’s bottom, and pull the battery compartment cover outward to open it.

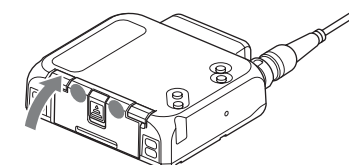


- 2 Insert the lithium-ion battery while holding down the lock lever with the battery’s edge until the battery is fully inserted and locked into place.

Be sure to check that the lithium-ion battery is oriented correctly beforehand.



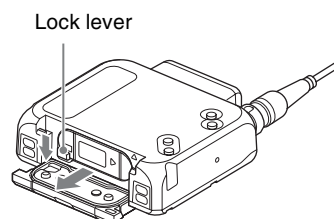
- 3 Press both sides of the tab at the bottom of the unit to close the battery compartment cover.



Removing the Battery

Open the battery compartment cover, and shift the lock lever to remove the battery.

Be careful not to drop the battery.



Notes

- To prevent dirtying of the terminals, short circuits, or other problems, place the removed battery in a plastic

bag, for example, and keep it away from metal objects during transport or storage.

- The battery will slowly discharge, even when the unit is turned off. Remove the battery from the unit before extended periods of disuse.

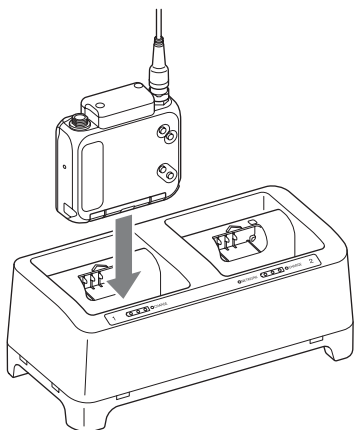
Charging the Battery

Notes

- Be sure to charge the battery before using the unit for the first time.
- A charged battery will slowly discharge, even when it is not in use. Be sure to charge the battery before each use to ensure safe operation.

Use the BC-DWX1 battery charger to charge the battery while it is inserted in the unit.

Insert the unit fully into the charging port on the BC-DWX1.



For details on charging, refer to the BC-DWX1 battery charger's operating instructions.

Charging time

Fully charging a fully discharged NP-BX1 rechargeable battery pack (supplied) inserted in the unit in an ambient temperature of 25 °C (77 °F) will take about 3 hours. The charging time may be longer depending on your operating environment. In addition, battery packs that have not been used for extended periods may take longer to charge.

When you are in a hurry

If necessary, devices can be removed from the unit before they are fully charged. However, their usable durations will vary depending on how long they were charged.

Notes

- If you insert the unit into the BC-DWX1 while the unit is turned on, the unit will turn off, but charging will still occur. The unit will remain turned off, even after you remove it from the BC-DWX1.
- Proper charging may not be possible if the battery terminals or the unit's charging terminals are dirty. In such cases, wipe the terminals with a dry cloth or cotton swab. When doing so, make sure that the unit is turned

off, and never touch the terminals directly with your hands.

- Always use genuine Sony lithium-ion batteries.

Remaining battery indicator

Indicates the remaining battery charge.

Replace the battery with a charged battery when the remaining battery indicator starts to blink.

Notes

- If you intend to use the unit continuously for an extended period, we recommend replacing the battery with a fully charged battery.
- The indicator may not be correct depending on your operating environment.
- The unit is designed to operate for at least 30 minutes after the remaining battery indicator starts to blink, but it may operate for longer in optimal environments.

Setting the Transmission Channel

The unit provides groups of interference-free channels. When using multiple wireless microphones and transmitters at the same time (simultaneous multi-channel operations) within the same area, you must use channels within the same group to prevent signal interference. To set the transmission channel on the unit, first select the frequency band, group, and channel on the receiver using its RF indicator and scanning functions, then match the frequency band, group, and channel settings on the unit with the settings on the receiver.

Notes

- Certain transmission channels cannot be used with the wireless remote control function.
For details on transmission channels that support the wireless remote control function, refer to “Sony Digital Wireless Microphone System Frequency Lists” on the supplied CD-ROM.
- When selecting the channel, “(INCOMPATIBLE WITH RF REMOTE)” will slide across the display for transmission channels that cannot be used with the wireless remote control function.
- When a transmission channel that cannot be used with the wireless remote control function is selected, “RESTRICTED BY GP/CH SETTING” appears on the RF REMOTE screen and the wireless remote control function cannot be used. To enable use of the wireless remote control function, select transmission channels for which “(INCOMPATIBLE WITH RF REMOTE)” does not appear during channel selection.

Selecting the Frequency Band, Group, and Channel

Set the frequency band (BAND), group (GROUP), and channel (CH) as follows.

For details on groups and channels, refer to “Sony Digital Wireless Microphone System Frequency Lists” on the supplied CD-ROM.

For details on menu operations, see “Basic Menu Operations” (page 10).

Notes

These settings cannot be changed during actual signal transmission.

- 1** Turn the unit off, and then hold down the POWER button while pressing the SET button.

The unit turns on with signal transmission stopped.

- 2** Use the + and – buttons to display the BAND screen.

- 3** Hold down the SET button until the setting value blinks.
- 4** Use the + and – buttons to select the frequency band.
- 5** Press the SET button to confirm.
- 6** Use the + and – buttons to display the GROUP screen.
- 7** Hold down the SET button until the setting value blinks.
- 8** Use the + and – buttons to select the group.
- 9** Press the SET button to confirm.
- 10** Use the + and – buttons to display the CH screen.
- 11** Hold down the SET button until the setting value blinks.
- 12** Use the + and – buttons to select the channel.
- 13** Press the SET button to confirm.

Notes

To start signal transmission with the selected frequency band, group, and channel, turn off the unit and then turn it on again.

Configuring the settings via Cross Remote pairing

When the unit is paired with the receiver, the unit's transmission channel is automatically set to the receiving channel on the receiver.

For details on pairing, see “Pairing” (page 8).

Using Cross Remote

The unit is equipped with a wireless remote control function that allows the unit's settings (low-cut filter, attenuation controls, power controls, etc.) to be controlled from the receiver or other devices. This makes it easier to operate and manage the microphone system while in the field.

The IEEE802.15.4-compliant wireless remote control function uses the 2.4- GHz band and has no effect on the RF band of digital wireless audio.

The function is activated when the unit is paired with the receiver via the RF REMOTE function.

Pairing must be performed before the wireless remote control function can be used.

Notes

If "RESTRICTED BY GP/CH SETTING" appears on the RF REMOTE screen, the wireless remote control function cannot be used. To enable use of the wireless remote control function, select a different transmission channel.

For details on changing the transmission channel, see "Setting the Transmission Channel" (page 7).

Pairing

Pairing links the unit to the receiver that will control the unit via the wireless remote control function.

Pairing will start automatically if pairing mode is enabled on the receiver side and you turn on the unit by holding down the POWER button while pressing the – button on the unit.

To perform pairing manually via the settings menu, perform the following.

- 1 Enable pairing mode on the receiver that will be controlling the unit.

For details, refer to the receiver's operating instructions.

- 2 Use the + and – buttons to display the RF REMOTE screen.

- 3 Hold down the SET button until the setting value blinks.

- 4 Use the + and – buttons to select PAIRING.

- 5 Press the SET button to confirm.

The unit sends a pairing request to the receiver on which pairing mode is enabled.

If you press any button on the unit before pairing is complete, pairing mode will be canceled.

When communication with the receiver is established, the condition indicator () rises, indicating that the

RF REMOTE function is enabled and remote control is possible.

Using Cross Remote with a previous pairing setting

Set the RF REMOTE screen setting value to ON.

Notes

- When RF REMOTE is set to ON, communication will be established with the previously paired receiver. To use the wireless remote control function with a different receiver, perform the pairing procedure again with the target receiver.
- Multiple instances of the unit cannot be paired with the same receiver.
- Resetting the unit to factory settings using the FACTORY PRESET function (page 15) clears any pairing with a receiver.

Unit operations that can be performed via remote control

- Unit name setting
- Frequency band, group, and channel selection
- RF transmission power setting
- MIC/LINE setting and attenuator setting for the audio input level
- Low-cut filter setting
- Power save setting
- Total usage time reset
- Audio codec mode setting
- Internal signal setting
- Lock setting
- Remaining battery indicator setting

For details on the settings, see "Menu Settings" (page 11).

To perform remote control, the receiver must be equipped with a control function for the target setting for control.

For details, refer to the receiver's operating instructions.

Stopping Cross Remote

Set the RF REMOTE screen setting value to OFF.

Notes on Cross Remote

As the unit's wireless remote control function uses the 2.4-GHz band, it may be subject to interference from other devices.

- If pairing fails (i.e., "Pairing fail" is displayed), perform pairing again.
In such cases, communication between the transmitter and receiver may not have been established within the predetermined amount of time.
Pairing may be hindered if another receiver is engaged in pairing nearby.
- Unstable remote control may be resolved by disabling and reenabling the wireless remote control function in the RF REMOTE screen, then reestablishing connection with the transmitter (i.e., changing to a channel with less interference).

Finding the unit from a paired receiver

Some receivers are equipped with a function that finds the transmitters with which they are paired.

When this search function is used on a receiver that is paired with the unit, the unit's organic EL display will blink.

Notes

If communication with the paired receiver is currently not possible, the unit's organic EL display will not blink when the receiver's search function is used.

For details, refer to the receiver's operating instructions.

Using the Encrypted Transmission Function

The unit is capable of transmitting encrypted signals to prevent unwanted surveillance.

To use the function, select one of the following encryption modes.

Encryption key modes (SECURE KEY / AES256):

An encryption key is automatically generated by the transmitter and used by both the transmitter and receiver in these one-to-one encrypted transmission modes.

The SECURE KEY mode is compatible with first and second generation DWX-series devices.

The AES256 mode uses AES 256-bit encryption for a higher level of security in transmissions.

Password mode (PASSWORD): A user-created password of up to 8 characters can be set for multiple transmitters (this unit) and receivers in this mode. This allows encrypted transmission within a group.

Notes

Make sure that encryption mode settings are identical on both the transmitter (this unit) and the receiver.

Using the Encryption Key Modes (SECURE KEY / AES256)

Use these modes for one-to-one encrypted transmission between one transmitter (this unit) and one receiver.

To enable encrypted transmission in these modes, an encryption key that cannot be read from the outside is automatically generated by the unit, and the key is transmitted to the receiver via the wireless remote control function.

A new encryption key for the transmitter (this unit) and receiver is automatically generated for each key transmission, resulting in highly secure communication. The encryption key for the transmitter (this unit) and receiver is retained when the unit is turned off, allowing you to resume the same encrypted transmission the next time you turn the unit on.

- 1** Prepare the transmitter (this unit).
 - ① Hold down the SET button in the unit's ENCRYPTION screen until the setting value blinks.
 - ② Use the + and – buttons to select SECURE KEY or AES256, and press the SET button.

- 2** Prepare the receiver.

Set the receiver that will receive the encryption key to SECURE KEY or AES256.

For details on receiver operations, refer to the receiver's operating instructions.

- 3** Exchange the encryption key.

On the receiver side, select REMOTE (wireless remote) as the encryption key exchange method, and perform encryption key exchange. REMOTE cannot be selected when the wireless remote control function is disabled.

Notes

If the receiver does not support AES256 mode, select SECURE KEY.

For details, refer to the receiver's operating instructions.

The unit searches for the receiver with which it is paired.

When the receiver is found, the encryption key is exchanged, and encrypted transmission begins.

Using the Password Mode (PASSWORD)

Use this mode for encrypted transmissions between multiple paired transmitters (this unit) and receivers. When the same user-created password is set on both the transmitters (this unit) and the receivers, the audio signal can be decoded. This mode is useful when you want to operate multiple transmitters (this unit) and receivers as a group, or receive transmissions from a single transmitter (this unit) on multiple receivers at the same time.

1 Hold down the SET button in the unit's ENCRYPTION screen until the setting value blinks.

2 Use the + and – buttons to select PASSWORD, and press the SET button.

3 Enter a password of up to 8 characters on the unit.

For details on how to enter the password, see the procedure described in "Unit Name Setting (NAME)" (page 11).

4 Set the encrypted transmission setting on the receiver to PASSWORD.

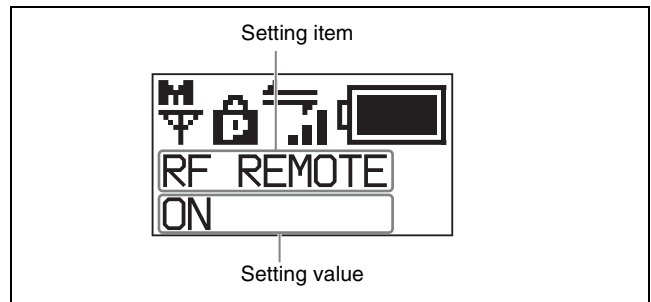
5 Set the same password that you set for the unit on the receiver.

For details on receiver operations, refer to the receiver's operating instructions.

Notes

We recommend changing the password periodically.

Basic Menu Operations



1 Use the + and – buttons to display screen of the item you want to set.

Holding down the + and – buttons allows you to cycle through screens quickly.

In addition, holding down the + button while the first setting item of the menu is displayed allows you to jump to the last setting item, while holding down the – button while the last setting item of the menu is displayed allows you to jump to the first setting item.

2 Hold down the SET button until the setting value blinks.

3 Use the + and – buttons to change the setting value.

4 Press the SET button to confirm.

Setting items in the menu

- NAME (transmitter name) setting
- BAND (frequency band) selection
- GROUP selection
- CH (channel) selection
- AF ATT (audio attenuator level) setting
- LCF (low-cut filter) setting
- LOCK function
- POWER SAVE setting
- RF REMOTE (wireless remote control) function
- SEARCH RX (receiver search) function
- CODEC MODE (audio codec mode) setting
- ENCRYPTION (encrypted transmission function) setting
- INPUT LEVEL (audio input level) setting
- AF PHASE (audio phase switch) setting
- INTERNAL SG (internal signal generator) function
- RF POWER (RF transmission power) setting
- MAX RF POWER (maximum RF transmission power) setting
- TIME display
- BATTERY REMAIN (remaining battery indicator) setting
- BRIGHTNESS (display brightness) setting
- DISPLAY DIMMER (automatic display dimmer) setting
- LED DIMMER (LED brightness) setting
- USER MEMORY (settings storage) function

- FACTORY PRESET (factory settings) function
- VERSION (software version) display

Menu Settings

This section describes the various setting items and their values. Underlined values represent factory settings.

Unit Name Setting (NAME)

Specify up to 16 characters for the unit's name. The factory setting is the unit's model name and serial number. The unit's name is sent to the receiver as metadata and used by the receiver to distinguish between different transmitters.

+ button: Displays the character set. Next, use the + and – buttons to select a character, and then press the SET button to add the selected character at the last position of the current name.

– button: Deletes the last character in the current name.

SET button: Confirms the selected character.

When you are finished editing the name, press the SET button to confirm it.

Notes

You cannot insert or delete characters in the middle of the name.

The name setting can be changed from the receiver and other devices via the wireless remote control function.

For details, see “Using Cross Remote” (page 8).

Frequency Band Selection (BAND)

Match the frequency band of the unit with that of the wireless receiver that will be used with the unit.

The frequency bands that can be set will differ depending on the models of the unit and the receiver. For details, see “Carrier Frequencies and Channel Steps” (page 24).

For details on the frequency range of each band, refer to “Sony Digital Wireless Microphone System Frequency Lists” on the supplied CD-ROM.

The frequency band setting can be changed from the receiver and other devices via the wireless remote control function.

For details, see “Using Cross Remote” (page 8).

Notes

- This setting cannot be changed during actual signal transmission. Turn the unit off, and then hold down the POWER button while pressing the SET button to turn the unit on in a state where signals are not transmitted before changing the setting.

- After selecting the frequency band, select the group and channel. To start signal transmission with the selected frequency band, group, and channel, turn off the unit and then turn it on again.

Group Selection (GROUP)

See “Carrier Frequencies and Channel Steps” (page 24) for the factory settings.

For details, see “Selecting the Frequency Band, Group, and Channel” (page 7).

The group setting can be changed from the receiver and other devices via the wireless remote control function.

For details, see “Using Cross Remote” (page 8).

Channel Selection (CH)

See “Carrier Frequencies and Channel Steps” (page 24) for the factory settings.

For details, see “Selecting the Frequency Band, Group, and Channel” (page 7).

The channel setting can be changed from the receiver and other devices via the wireless remote control function.

For details, see “Using Cross Remote” (page 8).

Audio Attenuator Setting

(AF ATT)

When INPUT LEVEL is set to MIC, select the attenuator level for audio inputs.

Notes

This setting cannot be changed when INPUT LEVEL is set to LINE.

Input audio from the connected microphone, and use the + and – buttons to select the attenuator level while viewing the input level meter.

The reference levels for the various settings are as follows.

Input	Attenuation (dB)	Reference input level (dBu)	Maximum input level (dBu)	Headroom (dB)
MIC	0	–58	–22	36
	3	–55	–19	
	6	–52	–16	
	9	–49	–13	
	3 dB steps	3 dB steps	3 dB steps	
	45	–13	+23	34
	48	–10	+24	
LINE	–	+4	+24	20

The audio attenuator setting can be changed from the receiver and other devices via the wireless remote control function.

For details, see “Using Cross Remote” (page 8).

Low-Cut Filter Setting (LCF)

Select from the following frequencies for the low-cut filter.

OFF: Disables the low-cut filter.

**20 30 40 50 60 70 80 90
100 120 140 160 180 200 220 (Hz):**

Enables the low-cut filter according to the selected frequency.

The low-cut filter setting can be changed from the receiver and other devices via the wireless remote control function.

For details, see “Using Cross Remote” (page 8).

Lock Function (LOCK)

Lock and prevent operations such as those for the POWER button and for settings changes. This prevents you from accidentally turning the unit off, for example.

UNLOCK: Disables operation locks for the POWER button and settings changes.

POWER: Locks POWER button operations only.

SETTING: Locks setting change operations only.

PWR+SET: Locks both POWER button and settings change operations.

Disabling the lock function

Set LOCK to UNLOCK.

Changes to the LOCK function are enabled, even when settings change operations are locked.

Lock function shortcuts

You can use to the unit’s buttons to enable or disable the PWR+SET setting and all lock functions without displaying the settings menu.

To enable the PWR+SET setting, hold down the SET and + buttons at the same time until the PWR+SET icon appears.

To disable the lock, hold down the SET and – buttons at the same time until the lock indicator disappears.

The lock setting can be changed from the receiver and other devices via the wireless remote control function.

For details, see “Using Cross Remote” (page 8).

Notes

Changes to settings via the wireless remote control function are enabled, even when settings change operations are locked. However, changes to settings will

not be possible via the wireless remote control function on receivers that do not support the settings change lock function.

For details, refer to the receiver's operating instructions.

Power Save Setting (POWER SAVE)

Set the transmitter's power supply to sleep mode via the wireless remote control function to conserve power.

ACTIVE: Sets the unit to normal operation mode.

SLEEP: Sets the unit to sleep mode. During sleep mode, the POWER indicator blinks at 2-second intervals.

Returning to normal operation mode

Press any of the unit's buttons during sleep mode.

Sleep mode can be exited from the receiver and other devices via the wireless remote control function.

For details, see "Using Cross Remote" (page 8).

Notes

If you turn the unit off with POWER SAVE to SLEEP, the setting will automatically revert to ACTIVE (normal operation) the next time you turn the unit on.

Cross Remote (RF REMOTE)

Enable use of the wireless remote control function between the unit and the receiver that will be used with the unit.

OFF: Disables the wireless remote control function.

ON: Enables use of the wireless remote control function with the paired device.

PAIRING: Executes a new pairing.

For details, see "Pairing" (page 8).

Receiver Search Function (SEARCH RX)

Use this function to quickly locate a receiver communicating on the same frequency as the unit. When the receiver is found, the receiver will react (e.g., the receiver's display will blink).

Notes

If a receiver does not support the receiver search function, it will not react.

For details on receiver actions, refer to the receiver's operating instructions.

Searching for receivers

Hold down the SET button in the SEARCH RX screen, and press the SET button again while the "SEARCH? YES" display is blinking.

Audio Codec Mode Setting (CODEC MODE)

MODE1: Audio codec mode that is compatible with first generation DWX-series devices.

MODE2: Audio codec mode that prioritizes short delay times while maintaining transmission stability and high audio quality.

MODE3: Audio codec mode that uses additional signal processing to suppress noise caused by unexpected pulse interference.

MODE4: Audio codec mode that prioritizes high audio quality that faithfully reproduces original sounds while maintaining transmission stability and low latency.

Under normal circumstances, we recommend using MODE2 (prioritizing delay times) or MODE4 (prioritizing audio quality).

However, use MODE1 when using the unit in conjunction with first generation DWX-series devices, and use MODE3 in environments where unexpected pulse interference may occur.

The audio delay durations that occur when transmitting and receiving with each mode will vary depending on the receiver's operating environment. For details, refer to the receiver's operating instructions.

The audio codec mode setting can be changed from the receiver and other devices via the wireless remote control function.

For details, see "Using Cross Remote" (page 8).

Encrypted Transmission Function Setting (ENCRYPTION)

Enable the encrypted transmission function.

SECURE KEY: Enables the encryption key mode that is compatible with first and second generation DWX-series devices.

AES256: Enables the AES256 encryption key mode.

PASSWORD: Enables the password mode.

OFF: Disables the encrypted transmission function.

For details, see "Using the Encrypted Transmission Function" (page 9).

Audio Input Level Setting (INPUT LEVEL)

Set the input level to the analog head amp.

Select LINE or MIC according to the audio source connected to the audio input connector.

The factory setting is MIC.

The MIC/LINE setting for the audio input level can be changed from the receiver and other devices via the wireless remote control function.

For details, see “Using Cross Remote” (page 8).

Audio Phase Switch Function (AF PHASE)

Switch the phase when a microphone that outputs with inverted phase is connected.

NORMAL: Disables phase inversion.

INVERT: Enables internal phase inversion on the unit.

Internal Signal Generator Function (INTERNAL SG)

Generate a 1-kHz reference level sine wave that can be used to adjust or check the audio level of the receiver or the system you are using. This signal is outside the control of the attenuator.

1 kHz: Generate a 1-kHz internal signal.

OFF: Disables internal signal generation.

Notes

If you turn the unit off with INTERNAL SG to 1 kHz and signal generation enabled, the setting will automatically revert to OFF the next time you turn the unit on.

The internal signal generator setting can be changed from the receiver and other devices via the wireless remote control function.

For details, see “Using Cross Remote” (page 8).

Transmission Power Setting (RF POWER)

Set the unit’s transmission power setting.

2 mW (LOW): Transmits at 2 mW.

10 mW (MID): Transmits at 10 mW.

25 mW (HIGH): Transmits at 25 mW.

Notes

- This setting cannot be changed during actual signal transmission. Turn the unit off, and then hold down the POWER button while pressing the SET button to turn the unit on in a state where signals are not transmitted before changing the setting.
- To start signal transmission with the selected transmission power, turn off the unit and then turn it on again.

The transmission power setting can be changed from the receiver and other devices via the wireless remote control function.

For details, see “Using Cross Remote” (page 8).

You can also configure the maximum transmission power.

For details, see “Maximum Transmission Power Setting (MAX RF POWER)” (page 14).

Maximum Transmission Power Setting (MAX RF POWER)

Set the unit’s maximum transmission power setting.

2 mW MAX: Sets the maximum to 2 mW.

10 mW MAX: Sets the maximum to 10 mW.

25 mW MAX: Sets the maximum to 25 mW.

Notes

- This setting cannot be changed during actual signal transmission. Turn the unit off, and then hold down the POWER button while pressing the SET button to turn the unit on in a state where signals are not transmitted before changing the setting.
- To start signal transmission with the selected transmission power, turn off the unit and then turn it on again.
- Always perform pairing after changing the transmitter’s maximum transmission power setting. Failure to do so may make it impossible to set the transmission power via the wireless remote control function.

For details on pairing, see “Using Cross Remote” (page 8).

Total Usage Time Display (TIME)

Display the total usage time of the unit as a rough estimate of your usage time.

The factory setting is “00:00.”

Resetting the usage time indicator

- 1 Hold down the SET button until the time display blinks.
- 2 Press the – button to display “00:00 RESET,” and press the SET button.

The total usage time can be reset from the receiver and other devices via the wireless remote control function.

For details, see “Using Cross Remote” (page 8).

Remaining Battery Indicator Setting (BATTERY REMAIN)

Set the display method for the unit’s remaining battery charge. The specified setting is sent as metadata and is also displayed on the receiver and other devices.

ICON: Displays the remaining battery charge as an icon.

TIME: Displays the approximate remaining usage time.

PERCENT: Displays the remaining battery charge as a percentage.

The remaining battery indicator setting can be changed from the receiver and other devices via the wireless remote control function.

For details, see “Using Cross Remote” (page 8).

Notes

- When TIME is selected and the setting’s metadata is received on the receiver, the TIME information (i.e., the approximate remaining usage time of the unit) will be displayed in the total usage time display position on the receiver. If you want to display the total usage time on the receiver, select an option other than TIME.
- When TIME or PERCENT is selected, the total usage time cannot be reset via the wireless remote control function.
- The indicator may not be correct depending on your operating environment.

Display Brightness Setting

(BRIGHTNESS)

Adjust the brightness of the organic EL display (10 levels). The selectable values are as follows.

(Dark) **1 2 3 4 5 6 7 8 9 10** (Bright)

Automatic Display Dimmer

Setting (DISPLAY DIMMER)

Set the organic EL display display to dim or turn off after a predetermined amount of time.

AUTO OFF: Turns the display off after 30 seconds.

Pressing any of the unit’s buttons lights the display again.

AUTO DIMMER: Dims the display after 30 seconds.

Pressing any of the unit’s buttons lights the display again.

ALWAYS ON: Maintains the brightness set in the display brightness setting at all times.

LED Brightness Setting (LED DIMMER)

Set the LEDs to dim after a predetermined amount of time.

OFF: Disables dimming.

DIMMER: Dims the LEDs after 30 seconds. Pressing any of the unit’s buttons lights the LEDs again.

Settings Storage Function (USER

MEMORY)

Store setting values on the unit, or load previously saved setting values.

When you execute SAVE, the values for the following settings will be saved.

- NAME (transmitter name) setting
- BAND (frequency band) selection
- GROUP selection
- CH (channel) selection
- AF ATT (audio attenuator level) setting
- LCF (low-cut filter) setting
- LOCK function
- RF REMOTE (wireless remote control) function

- CODEC MODE (audio codec mode) setting
- ENCRYPTION (encrypted transmission function) setting
- INPUT LEVEL (audio input level) setting
- AF PHASE (audio phase switch) setting
- RF POWER (RF transmission power) setting
- MAX RF POWER (maximum RF transmission power) setting
- BATTERY REMAIN (remaining battery indicator) setting
- BRIGHTNESS (display brightness) setting
- DISPLAY DIMMER (automatic display dimmer) setting
- LED DIMMER (LED brightness) setting

When you execute LOAD, the saved setting values will be loaded.

Notes

- This function cannot be executed during actual signal transmission. Turn the unit off, and then hold down the POWER button while pressing the SET button to turn the unit on in a state where signals are not transmitted before execution.
- To start signal transmission after using this function, turn off the unit and then turn it on again.
- You cannot execute LOAD if you have never executed SAVE.
- If you execute LOAD while performing the following operations after setting values were stored, proper communication with the receiver will not be possible. In such cases, perform pairing or encrypted transmission settings again.
 - Pairing the unit or establishing encrypted transmission with a different receiver.
 - Pairing the receiver that was paired with the unit with a different transmitter.
 - Establishing encrypted transmission between the receiver and a different transmitter.

Factory Settings Restoration (FACTORY PRESET)

Reset all setting values to their factory settings.

When you hold down the SET button, a factory reset confirmation message appears. Press the SET button while the “YES” display is blinking to reset the unit’s settings to factory settings.

Notes

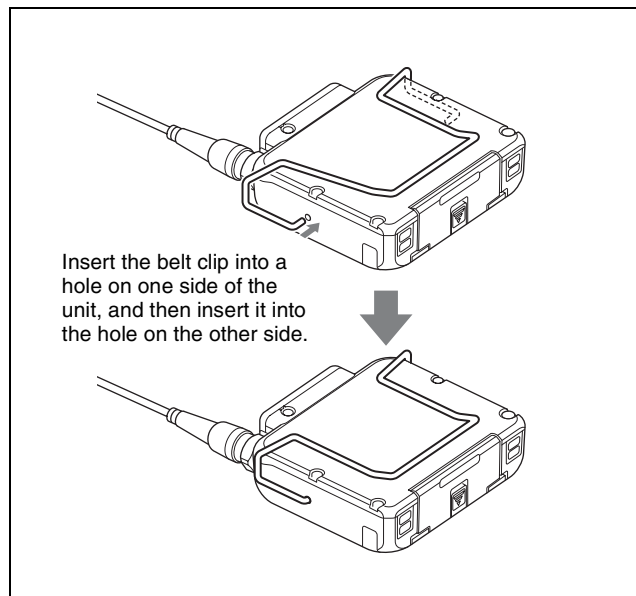
- This setting cannot be changed during actual signal transmission. Turn the unit off, and then hold down the POWER button while pressing the SET button to turn the unit on in a state where signals are not transmitted before changing the setting.
- To start signal transmission with the factory settings, turn off the unit and then turn it on again.

Software Version Display (VERSION)

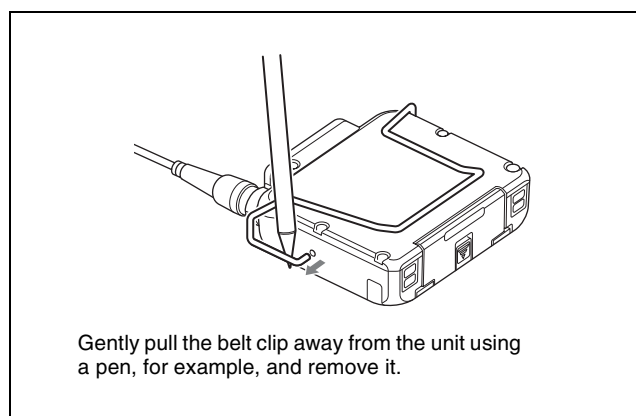
Display the version of the unit's software.

Attaching the Belt Clip

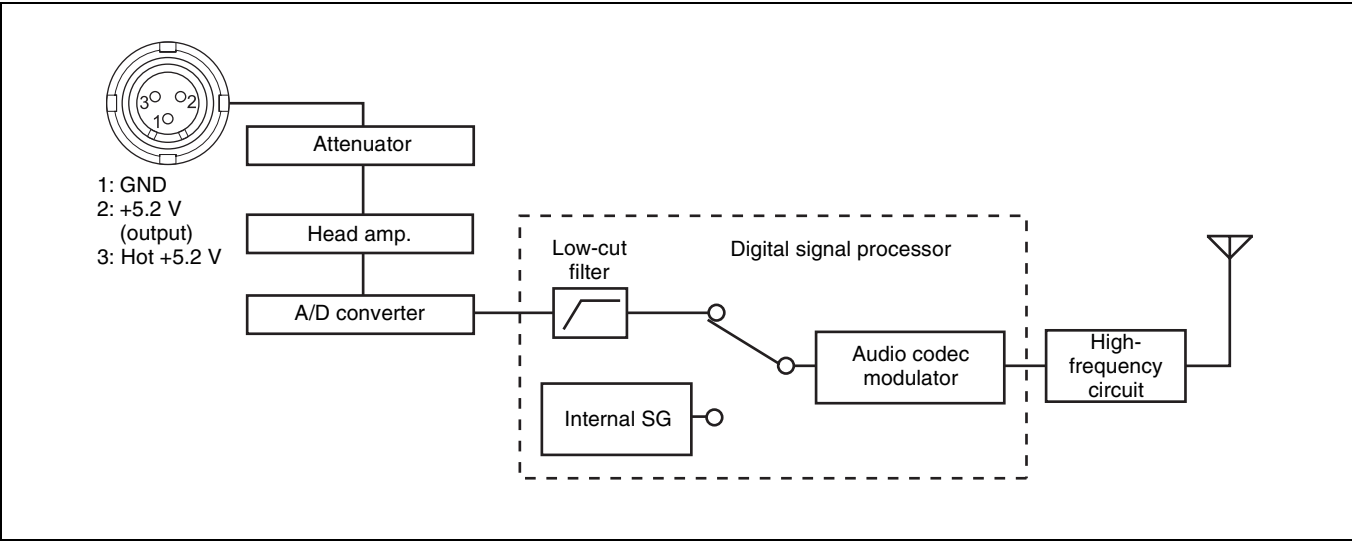
Attaching the supplied belt clip allows you to attach the unit to the speaker.



Removing the belt clip



Block Diagram



Troubleshooting

If you encounter a problem when using the unit, check the following. If the problem persists, contact your Sony representative.

Symptom	Cause	Solution
Interruptions occur in the receiver audio.	The unit is too far from the receiver.	Reduce the distance from the receiver, and check the reception.
	The transmission power setting is set to "L: 2 mW."	Increase the transmission power (page 14).
There is no audio.	The channel setting on the unit is different from that on the receiver.	Match the channel settings on the unit and receiver.
	The encrypted transmission function settings on the receiver and transmitter do not match.	Match the encryption transmission function settings on the transmitter and receiver (page 9).
	The audio codec mode settings on the receiver and transmitter do not match.	Match the audio codec mode settings on the receiver and transmitter (page 13).
The audio is weak.	The audio input level on the unit is set to LINE, or the attenuator setting is too high.	If a microphone is connected, set the audio input level to MIC (page 13). In addition, set the attenuator to an appropriate level while monitoring the unit's audio input level meter.
The audio is distorted.	The attenuator is set too low for the audio input level of the unit.	Set the attenuator to a level that does not produce distortion while monitoring the unit's audio input level meter.
There is no bass.	The frequency of the low-cut filter is set too high.	Decrease the low-cut filter frequency to a level that produces the proper sound quality while monitoring the audio (page 12).
There is too much bass.	The bass of the connected microphone, for example, seem excessive, because the frequency response of the unit extends into the low 20-Hz range.	Use the low-cut filter function to cut the bass (page 12).
The unit does not turn off, even when the POWER button is held down.	Operation of the POWER button is locked.	Set the LOCK function to UNLOCK (page 12).
Settings cannot be changed.	Changes to the settings are locked.	Set the LOCK function to UNLOCK (page 12).
Wireless remote control is not possible.	Pairing has not been performed.	Perform pairing (page 8).
	The unit is too far from the receiver for communication to occur.	Check the condition indicator, and reduce the distance from the receiver if the level is low (page 4).
	The transmitter that was paired with the receiver has been paired with another receiver.	On the receiver side, perform pairing with the transmitter you want to control again (page 8).
The display is too dark.	The display brightness is set to low.	Adjust the brightness of the display in the settings menu (page 15).
The LEDs are too dark.	The LED brightness setting is set to DIMMER.	Set the LED DIMMER setting to OFF (page 15).
The transmission power cannot be set.	The maximum transmission power setting may be limiting the transmission power setting.	Check the maximum transmission power setting, and adjust the setting accordingly.
The battery cannot be inserted into the unit.	The battery is oriented incorrectly.	Check the orientation of the battery, and insert it until the lock lever locks into place (page 5).
The remaining battery indicator is incorrect. The unit turns off immediately, even when the remaining charge is sufficient. The unit does not turn on.	A battery other than the supplied NP-BX1 rechargeable battery pack is being used.	Use the supplied NP-BX1 rechargeable battery pack.
	The battery is not sufficiently charged.	The battery will slowly discharge naturally, even when the unit is not used. Fully charge the battery. If the remaining charge is not properly displayed after fully charging the battery, the battery may have reached the end of its life cycle. Use a new battery pack.
	The ambient temperature is extremely high or extremely low.	This is not a malfunction. Use the unit within the allowable operating temperature range.

Symptom	Cause	Solution
The battery discharges quickly.	The battery is not sufficiently charged.	The battery will slowly discharge naturally, even when the unit is not used. Fully charge the battery. If the remaining charge is not properly displayed after fully charging the battery, the battery may have reached the end of its life cycle. Use a new battery pack.
	The ambient temperature is extremely high or extremely low.	This is not a malfunction. Use the unit within the allowable operating temperature range.

Important Notes on Operation

The life expectancy of the electrolytic capacitor is about 5 years under normal operating temperatures and normal usage (8 hours per day; 25 days per month).

If usage exceeds the above normal usage frequency, the life expectancy may be reduced correspondingly.

The battery terminal of this unit (the connector for battery packs and AC adapters) is a consumable part.

Power may not be supplied to the unit properly if the pins of the battery terminal are bent or deformed by shock or vibrations, or if they become corroded due to prolonged outdoor use.

Periodic inspections are recommended to keep the unit working properly and to prolong its usable lifetime.

Contact a Sony service or sales representative for more information about inspections.

Operation and Storage

- The unit must be used within a temperature range of 0 °C to 50 °C (32 °F to 122 °F).
- Using the unit near electrical equipment (motors, transformers, or dimmers) may cause it to be affected by electromagnetic induction. Keep the unit as far from such equipment as possible.
- The presence of the lighting equipment, including decorative lights, may produce electrical interference over the entire frequency range. The interference will vary depending on the positions of the receiving antenna and wireless microphone, so position equipment so that interference is minimized.
- When using the unit in locations with excessive noise or vibration, the vibration may transfer directly to the unit, resulting in the generation of electrical noise (microphonics) and degradation of the signal-to-noise ratio. To prevent such occurrences, avoid using the unit in the following locations.
 - Near motors, transformers, etc.
 - Locations subject to noise and air flow from air conditioning equipment
 - Near PA (public address) system speakers
 - Locations subject to knocks or contact from adjacent equipment

In addition to keeping the unit as far from such equipment as possible, use buffering materials or take other preventative measures.

Cleaning

- After using the unit in excessively humid or dusty locations or in the presence of active gases, clean the surface of the unit and its connectors as soon as possible. Extended use in such locations or failure to clean may shorten the life cycle of the unit.

- Wipe the surface of the unit and its connectors using a soft, dry cloth. Never use chemicals, such as thinner, benzene, or alcohol, as they may damage the finish.

Notes on Simultaneous Multi-Channel Operation

- Keep transmitters at least 30 cm (11 7/8 in.) away from each other.
If distances closer than the above between transmitters cannot be avoided, use a grouping system for multi-channel systems that includes both analog wireless and digital wireless devices.

For details, refer to “Sony Digital Wireless Microphone System Frequency Lists” on the supplied CD-ROM.

- Refer to the following when determining the distances between the transmitters and the antennas of receivers.

When using only digital wireless devices:

- At least 4 m (13 ft.) (for up to 10 channels)
- At least 6 m (20 ft.) (for 11 or more channels)

When using a mixture of digital and analog wireless devices:

At least 6 m (20 ft.)

- This system should be kept at least 100 m (328 ft.) away from any analog wireless systems using the same frequency when both are being used in a wide area with no walls or obstructions.
- If noise occurs, increase the distance between the transmitter and receiver or decrease the transmission power on the transmitter.

Notes on Use with Microphones

We recommend using the ECM-77LM lavalier microphone with the unit. The unit's transmission signal may cause noise on other microphones. If noise occurs, you may be able to reduce it by changing the position of the microphone cable, moving the microphone connection away from the antenna, or decreasing the transmission power.

To prevent electromagnetic interference from portable communication devices

The use of portable telephones and other communication devices near the unit may result in malfunction and interference with audio signals. It is recommended that portable communication devices near the unit be turned off.

CROSS REMOTE Compatibility

As the unit supports a wider band than previous transmitters, establishing wireless remote communication via CROSS REMOTE between the unit and DWX-series devices requires firmware update for the receiver and RMU-01 unit.

For details on updating the firmware on the DWX-series receiver or RMU-01 unit, contact your Sony representative.

For details on how to check the software version, refer to the device's operating instructions.

Applicable devices and versions

- DWR-R01D: Version: 1.28 or earlier
- DWR-S01D: Version: 1.16 or earlier
- DWR-R02D: Version: 1.09 or earlier
- DWR-S02D: Version: 1.07 or earlier
- DWR-R02DN: Version 1.18 or earlier
- DWR-S02DN: Version 1.18 or earlier
- RMU-01: Version 1.26 or earlier

Notes on Accessories

We recommend using Sony accessories with the unit. When products from other manufacturers are used, performance cannot be guaranteed and Sony will not be liable for any resulting damages.

Notes on the Battery

Charge the battery in an ambient temperature range of 10 °C to 30 °C (50 °F to 86 °F). Efficient charging may not be possible at other temperatures.

Battery usage

- Battery performance drops in low ambient temperatures, resulting in shorter usable durations. To extend the usage duration in low ambient temperatures, place the battery in your pocket, for example, and insert it in the unit immediately before use.
- The battery is not waterproof. Be careful not to wet the battery.
- Do not leave the battery in high temperature environments, such as inside a hot car or under direct sunlight.
- If the battery terminals are dirty, problems, such as power not being supplied or charging not being possible, may occur. In such cases, wipe the battery terminals with a dry cloth or cotton swab to remove the dirt.

Battery storage

- Even during extended periods of disuse, charge the battery about once a year to maintain its functionality. After charging the battery, insert it in the unit, use it until it is completely discharged, and then remove it from the unit before storing it in a cool location with low humidity.
- To prevent dirtying of the terminals, short circuits, or other problems, place the removed battery in a plastic bag, for example, and keep it away from metal objects during transport or storage.

Battery life cycle

- The battery is a consumable part. The battery's charge capacity will gradually decrease as time passes and the battery is used. When the battery's usable duration

becomes drastically reduced, it may have reached the end of its life cycle. Purchase a new battery in such cases.

- The battery's life cycle will vary depending on storage methods, usage conditions, and environments.

Notes on Drip Resistance

The unit is designed with a drip resistance equivalent to IPX4/IPX5*. Water entering the inside of the unit may result in fire, electric shock, or malfunction. Be sure to read and understand the following precautions before use.

* IPX represents the degree ingress protection against water. IPX4-equivalent specifications protect unit functionality against splashes from all directions, while IPX5-equivalent specifications protect against jets of water from all directions.

The unit's drip resistance is based on testing by Sony with the battery compartment cover completely closed and locked and the antenna completely secured. Sony will not be liable for any damages resulting from ingress due to improper handling of the unit.

Ensuring drip resistance

Be sure to read the following precautions, and handle the unit properly.

- The battery compartment cover plays a vital role in maintaining drip resistance. When using the unit, be sure to lock the battery compartment cover securely and check that it is completely closed. Drip resistance cannot be maintained when foreign objects are caught between the cover's rubber packing and the surface the packing meets. This may result in malfunction due to ingress of water into the battery compartment. In such cases, remove the foreign objects with a soft cloth that does not leave behind particles.
- The unit's rubber packing may crack or deform over extended use depending on the usage environment. We recommend periodic inspections to ensure drip resistance. For details, contact your Sony representative.
- The unit is not water resistant. Do not submerge the unit in water, subject it to running faucet water, or otherwise subject it to high water pressure.
- Drip resistance cannot be guaranteed if the unit is dropped or otherwise subjected to strong shock. In such cases, we recommend inspection or repair.

Specifications

Main Unit

Transmitting section

Oscillator type	Crystal-controlled PLL synthesizer
RF power output	2 mW/10 mW/25 mW (e.r.p) selectable
Antenna type	$\lambda/4$ flexible wire
Occupied RF bandwidth	192 kHz or less
Audio delay	MODE1: 0.8 ms MODE2: 0.7 ms MODE3: 1.8 ms MODE4: 0.7 ms
Allowable deviation of transmission frequency	± 6.5 ppm
Type of emission	G1E or G1D
Modulation method	$\pi/4$ Shift QPSK

Audio section

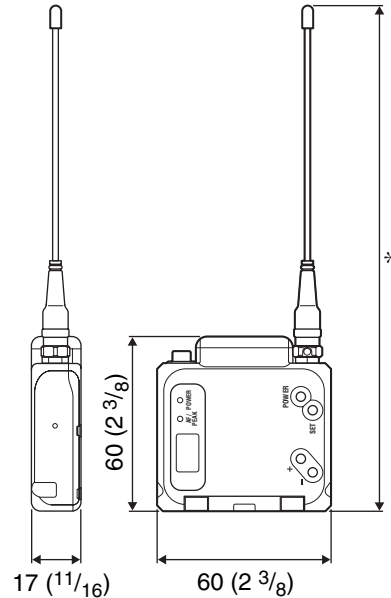
Maximum input level	MIC: -22 dBu (with 0 dB attenuator) LINE: +24 dBu
Audio attenuator adjustment range (pad)	0 dB to 48 dB (3 dB steps, MIC input mode only)
Microphone input connector	Small 3-pin connector with lock
Input impedance	4.7 kohms or more
Frequency response	20 Hz to 22,000 Hz
T.H.D	MODE1, MODE2, MODE4: 0.03% or less MODE3: 0.3% or less
Dynamic range	106 dB or more

0 dBu = 0.775 V

General

Operating voltage	3.6 V DC, NP-BX1 rechargeable battery pack
Battery life	During 10-mW output: Continuous operating time 7 hours During 25-mW output: Continuous operating time 4 hours 30 minutes (at 25 °C (77 °F), using NP-BX1 rechargeable battery pack, CODEC MODE set to MODE1, wireless remote control function disabled, DIMMER MODE set to AUTO OFF)

Drip resistance	Equivalent to IPX4/IPX5 (according to Sony test conditions)
Operating temperature	0 °C to 50 °C (32 °F to 122 °F)
Charging temperature	0 °C to 40 °C (32 °F to 104 °F)
Storage temperature	-20 °C to +60 °C (-4 °F to +140 °F)
Wireless remote control	2.4-GHz IEEE802.15.4 compliant
Dimensions (unit: mm (inches))	



- * UC/CE L model: 214 (8 1/2)
- * CE H model: 181 (7 1/4)

Mass	Approx. 99 g (3.5 oz.) including NP-BX1 rechargeable battery pack
Supplied accessories	Belt clip (1) NP-BX1 rechargeable battery pack (1) Carrying case (1) Scribble sheet (1) Before Using This Unit (3) CD-ROM (1)
Optional accessories	ECM-77LM lavalier microphones BC-DWX1 battery charger

NP-BX1 Rechargeable Battery Pack

Battery	Lithium-ion battery
Maximum voltage	4.2 V DC
Nominal voltage	3.6 V DC
Capacity	4.5 Wh (1240 mAh)

Design and specifications are subject to change without notice.

Notes

- Always verify that the unit is operating properly before use.
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Carrier Frequencies and Channel Steps

Underlined values represent factory settings.

US model

Channel step: 25 kHz

Frequency band	Frequency	Group/channel (factory setting)
TV14-17	470.125 - 493.875 MHz	<u>00 1801 494.125 MHz</u>
<u>TV18-21</u>	494.125 - 517.875 MHz	
TV22-25	518.125 - 541.875 MHz	
TV26-29	542.125 - 565.875 MHz	
TV30-33	566.125 - 589.875 MHz	
TV34-36	590.125 - 607.875 MHz	
TV37	Not available	
TV38	614.125 - 615.875 MHz	

The maximum transmission power (MAX RF POWER) for TV38 (614.125 - 615.875 MHz) is 10 mW.

European models

Channel step: 25 kHz

Model No.	Frequency band	Frequency	Group/channel (factory setting)
L (TV21-TV38)	<u>TV21-23</u>	470.025 - 494.000 MHz	<u>00 2101 470.125 MHz</u>
	TV24-26	494.025 - 518.000 MHz	
	TV27-29	518.025 - 542.000 MHz	
	TV30-32	542.025 - 566.000 MHz	
	<u>TV33-35</u>	566.025 - 590.000 MHz	
	TV36-37	590.025 - 606.000 MHz	
	TV38	606.025 - 614.000 MHz	
H (TV33-TV51)	<u>TV33-35</u>	566.025 - 590.000 MHz	<u>00 3301 566.125 MHz</u>
	TV36-37	590.025 - 606.000 MHz	
	TV38	606.025 - 614.000 MHz	
	TV38-40	606.025 - 630.000 MHz	
	TV41	630.025 - 638.000 MHz	
	TV42-44	638.025 - 662.000 MHz	
	TV45-47	662.025 - 686.000 MHz	
	TV48-50	686.025 - 710.000 MHz	
	TV51	710.025 - 714.000 MHz	

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