

Digital Wireless Receiver

Operating Instructions

DWR-R03D

DWX **WiDIF-HP**
DIGITAL WIRELESS  Cross Remote

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Features

The DWR-R03D Digital Wireless Receiver is a rack-mountable wireless receiver capable of receiving two channels from digital wireless transmitters. This receiver enables the application of multiple channels over unused television channels through the use of the built-in Sony original channel plan.

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.

Preprogrammed wireless channel plans for simultaneous multi-channel operation

The unit has many preprogrammed channel groups, meaning combination of wireless channels to permit simultaneous operation of multiple channels without intermodulation. The unit also has channel plans for multi-channel system using digital wireless system with analog wireless system, making the channel setting easier in such cases.

Dante audio networking support

IP transmission of multi-channel audio and redundancy is supported via the two Dante ports. Monitoring the audio of

a separate receiver is also possible without having to switch the connected headphones.

Stable RF transmissions

Stable RF transmission is achieved via the X-Dimension Diversity reception system and RF lines with high dynamic range. The unit supports a 4-channel diversity reception system that ensures wide-area coverage and unmatched RF transmission performance.

Wireless remote control system via Cross Remote

Remote control of a digital wireless transmitter's settings is possible while viewing them on the unit's display.

Remote control from a computer is also possible using the computer control software.

Operation status monitoring and remote control of devices via the Wireless Studio software

Wireless Studio software allows you to monitor the status of each receiver, transmitter, and RMU used for operation, as well as change the settings for each receiver and transmitter. By saving the setting configurations as settings files and loading the files, you can configure groups of settings simultaneously.

Three audio codec modes

Switch between audio codec modes based on your operational needs.

For details, see "Setting the Audio Codec Mode" on page 17.

Flexible audio output settings

The unit is equipped with SUB OUT connectors that allow you to switch between analog (balanced) and AES/EBU digital outputs. You can also adjust the audio output level in 1-dB steps.

Encrypted transmissions

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

Auto channel scanning functions

The unit comes with two auto channel scanning functions (active channel scan function and clear channel scan function) that allow for fast, easy and safe frequency channel changes.

Antenna cascade connection

Up to eight units can be connected to establish an antenna cascade, allowing operation with up to 16 channels without the use of an antenna divider. Using a WD-850

UHF Antenna Divider (not supplied) allows you to configure systems that exceed 16 channels.

Labeling function

By configuring a name for each receiver channel, you can display the names even when the transmitters are turned off.

Various information display and improvement of operability

The large OLED (organic light emitting diode) displays for each channel allow you to view various important information during operation. The large display, menu buttons, and jog dial enable fast operation. Furthermore, an ALERT indicator on the front panel lights if trouble occurs during operation, so you can respond quickly.

AC output connector

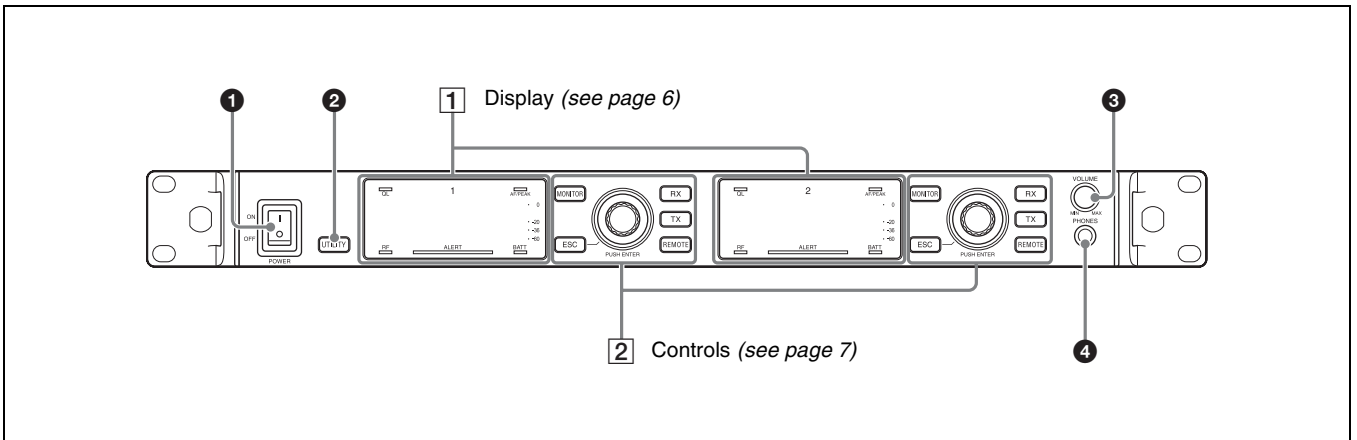
Cascading power connections are possible.

Various useful functions

A setting lock function to prevent accidental operation and a user settings function that allows you to store and recall various settings on the receiver are available. You can also search for paired transmitters and search for receivers from the transmitters.

Parts Identification

Front Panel



❶ POWER switch

Turns the receiver on or off.

Set to the **I** position to turn the receiver on. Set to the **O** position when turning off the main power supply.

❷ UTILITY (UTILITY menu) button

Press to display UTILITY menu. This button lights up brightly during UTILITY menu operation.

❸ VOLUME (monitor volume) control

Rotate to control the monitor volume of the selected channel.

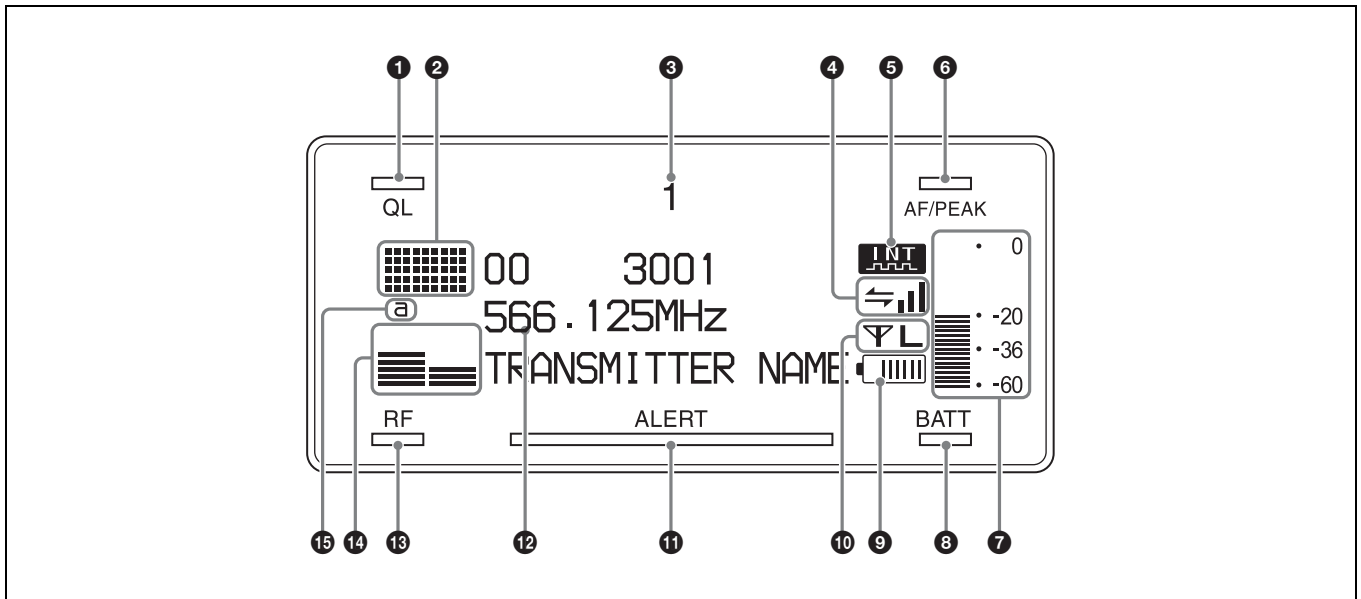
❹ PHONES (headphones) terminal

Connect the headphones here.

1 Display

The contents of the display before the unit enters menu operation (top display) are described below. Since the top display shows information contained in the metadata sent from the transmitter as well as the receiver settings and status, this can be used for operation monitoring.

The display contents of receiver channel 1 and 2 are the same. The display of receiver channel 1 is used for illustration purposes.



1 QL (signal quality level) indicator

Lights green when the quality of the received data is normal, and lights red when the number of bars lit for the QL meter decreases.

2 QL (signal quality level) meter

Indicates the quality of data that is received. This meter allows you to monitor RF signal deterioration that may occur when there is signal interference or when the transmitter is too far from the receiver.

3 Receiver channel number

Indicates the receiver channel number.

4 Cross Remote condition indication

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

- ☑️: Good transmission
- ☑️: Somewhat good transmission
- ☑️: Somewhat poor transmission
- ☑️: Poor transmission
- ☑️: Unable to communicate with paired transmitter

Note

When the wireless remote control function is off, this indication does not appear.

5 Digital output sync indication

Indicates sync status of the signal output from the DIGITAL OUT connectors.

INT: Output signal is in sync with the internal clock.

EXT: Output signal is in sync with the signal input from the WORD SYNC IN connector.

6 AF/PEAK (audio signal peak) indicator

Lights up green when the audio signal exceeding reference level is input to the transmitter.

Lights up red when the audio signal exceeding -3 dBFs is input to the A/D converter on the transmitter.

7 Audio level meter

Indicates the level of audio signal input to the transmitter. The segments indicating below the reference input level of the transmitter appear dimly.

When "MIC" is set for the reference input level on the transmitter: Segments indicating -36 dBFs or below appear dimly.

When "LINE" is set for the reference input level on the transmitter: Segments indicating -20 dBFs or below appear dimly.

8 BATT (battery warning) indicator

Lights green when the remaining battery charge on the transmitter is sufficient, and lights red when the remaining battery indicator starts blinking.

9 Remaining battery indicator

Indicates the remaining battery charge of the transmitter according to the transmitter's indicator information that is received via metadata.

Replace both batteries when the battery indication starts to flash.

For details on the transmitter's remaining battery indicator settings and battery replacement, refer to the transmitter's operating instructions.

10 Transmission power indication

Indicates the current transmission power setting. This setting can be changed in the TRANSMITTER menu.

☒ **H**: transmitting at 50 mW

☒ **M**: transmitting at 10 mW

☒ **L**: transmitting at 1 mW

11 ALERT (alert) indicator

Lights up red when error is detected.

For the specific causes of alerts and remedies, see “When the Alert Indicator Lights” on page 19.

12 Reception channel information

Shows the information on receiving signal and the transmitter name.

First row: Group and channel

Middle row: Frequency of the channel

Last row: Transmitter name and sleep state

13 RF (radio reception) indicator

Lights up to indicate the level of the signal input from the ANTENNA IN connector as follows.

On in orange: 87 dB μ or more

On in green: 25 dB μ to 87 dB μ

On in red: 15 dB μ to 25 dB μ

Off: Less than 15 dB μ

14 RF (radio reception) level meters

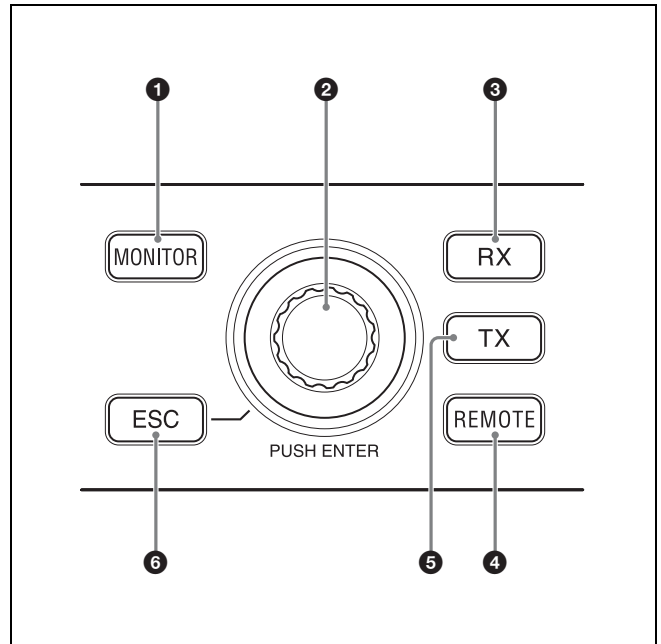
Indicates the level of the signal input from the ANTENNA IN connector. The number of segments that light up depends on the input level.

15 Antenna selection indication

Indicates the antenna currently selected by the diversity function.

2 Controls

The control areas for channel 1 and channel 2 are identical.



1 MONITOR (monitor output) button

Press to monitor the output of the selected receiver channel via the headphones.

The UTILITY > AUDIO > MONITOR MODE setting allows you to output only the selected receiver channel, output a mix of multiple channels, or otherwise configure the monitor output.

Note

When MONITOR MODE is set to IP SOLO or IP MIX, hold down the MONITOR button until it lights.

2 Jog dial

Rotate to select an item or a parameter value in the menu. Press to enter the selected item or parameter value.

3 RX (RECEIVER menu) button

Press to enter the RECEIVER menu. While in the RECEIVER menu, this button lights up brightly.

4 REMOTE (RF REMOTE menu) button

Press to enter the RF REMOTE menu. While in the RF REMOTE menu, this button lights up brightly.

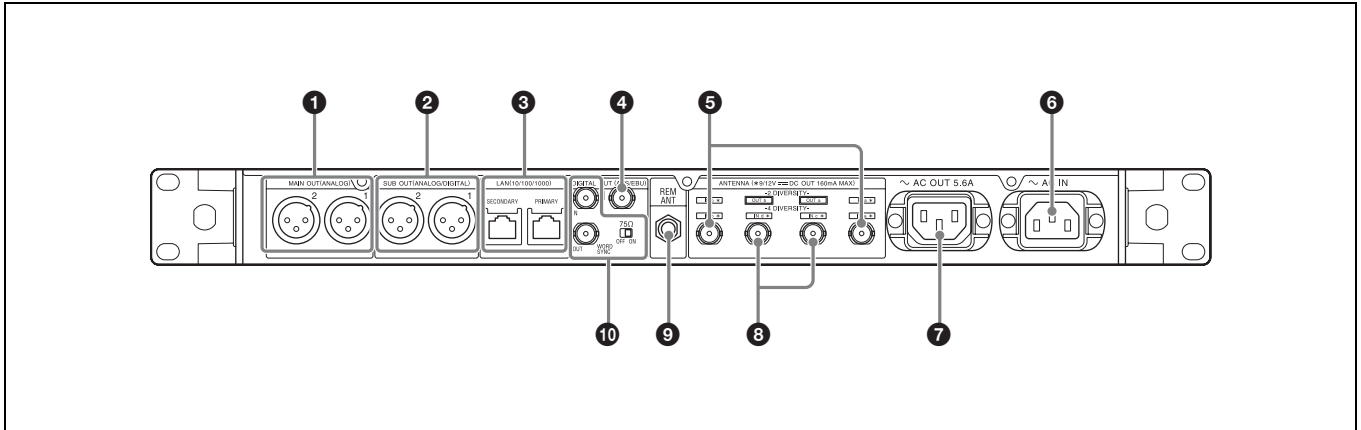
5 TX (TRANSMITTER menu) button

Press to enter the TRANSMITTER menu. While in the TRANSMITTER menu, this button lights up brightly.

6 ESC (escape) button

Press to go back to the previous menu display.

Rear Panel



1 MAIN OUT (main output) (analog output) 1/2 connectors (XLR)

Connect the analog input connector of mixer, amplifier, or other equipment.

You can use menu operations to set the output level and to disconnect the XLR connector grounding (pin 1) and the chassis grounding.

2 SUB OUT (sub output) (digital / analog output) 1/2 connectors (XLR)

Outputs AES3-format digital audio signals or analog audio. You can switch the output via menu operations.

3 LAN (Ethernet) (10/100/1000) / Dante (Dante networking) PRIMARY/SECONDARY connectors (RJ-45)

Use these to establish 1000BASE-T network connections. Connect to a Windows computer or a hub, and use Wireless Studio to communicate.

With Dante digital audio supported, redundancy and headphone monitoring are possible in addition to IP transmission of multi-channel audio.

Use LAN cables that are Category 5e or higher and 100 m or less in length. If the distance to the device exceeds 100 m, connect a hub between the unit and the device.

You can specify the signal transmitted from the LAN connectors according to the UTILITY > NETWORK > NETWORK MODE setting.

SWITCHED: Transmits the same signal from both of the LAN connectors. Signals for the Dante primary network and for communication between DWX devices are transmitted from both the PRIMARY connector and SECONDARY connector.

REDUNDANT: Enables the Dante redundancy function. Signals for the Dante primary network and for communication between DWX devices are transmitted from the PRIMARY connector, and signals for the Dante secondary network are transmitted from the SECONDARY connector.

SEPARATE: Separates the Dante network and DWX device communication signals. Signals for the Dante primary network are transmitted from the PRIMARY connector, and signals for communication between DWX

devices are transmitted from the SECONDARY connector.

When using the headphone monitoring function, connect each monitored device with both the Dante audio network and DWX device communication, and configure the identical values for UTILITY > AUDIO > MONITOR MODE.

4 DIGITAL OUT (digital output) connector (BNC-R)

These connectors output a digital audio signal in AES3 format. Connect the digital input connector of mixer, amplifier, or other equipment.

5 ANTENNA a/b IN (antenna a/b input) connectors (BNC-R)

Connect an optional UHF antenna (e.g., AN-820A) and the supplied whip antenna to these connectors.

When an antenna is connected, this connector supplies 9 V or 12 V DC power to the booster incorporated in the antenna. When using an antenna which does not require a power supply, you can turn off the power output by menu operation.

Antenna attenuator can be also set with menu operation according connection methods of the antennas.

Notes

- Do not short-circuit this connector.
- When connecting multiple units in cascade, set ANT ATT a/b to “0dB” and ANT DC OUT to “OFF” on any DWR-R03D unit that is not directly connected to the antenna.

About the antenna gain and the cable loss

When the antenna with the booster is connected to the unit and the antenna gain exceeds the coaxial cable loss between the antenna and the unit, the RF signal which exceeds the allowable level may be input to this unit. To prevent this, set the cable loss and antenna attenuator (0 dB, 3 dB, 6 dB, 9 dB, 12 dB) to meet the following equation.

The RF indicator on the receiver lights in orange when the input becomes 87 dBμ or higher, so you can use it as a rough guide.

Gain of antenna booster - Cable loss between antenna and this unit - Antenna attenuator setting (dB) = 0 dB or less

Reference: signal loss examples

Type of cable		RG-212/U		RG-213/U	
Frequency		600 MHz	800 MHz	600 MHz	800 MHz
Cable length	50 m (approx. 165 ft)	12 dB	14 dB	9 dB	11 dB
	100 m (approx. 330 ft)	24 dB	28 dB	18 dB	22 dB

For details on gain of antenna booster, refer to the operating instructions supplied with the antenna.

Notes

- The cable loss may differ depending on the manufacturer of the cables.
- The rated resistance of ANTENNA IN connectors is 50 Ω. If the cable with 75 Ω resistance is used, actual signal loss is usually a few dB lower than the values on the table above.

6 AC IN connector

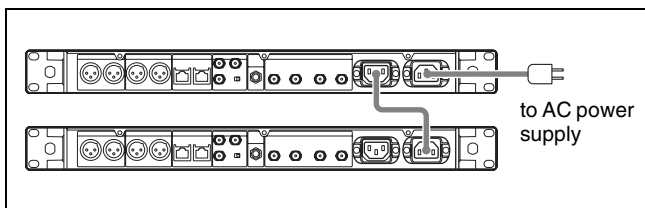
Connect to an AC power source with the supplied AC power cord.

7 AC OUT connector

Using the supplied cascading power cord, up to three DWR-R03D units can be connected to a single AC power supply.

Notes

- The maximum number of units that can be connected in a cascade connection using the supplied cascading power cord varies depending on the operating environment. Connections beyond these limits may result in fire or electric shock.
 - Up to 2 when connected to an IT power distribution system.
 - Up to 3 in Japan.
 - Up to 5 in other countries.
- When using the supplied cascading power cord to connect DWR-R03D units in a cascade connection, install the units as shown in the following or mount them on a rack.



8 ANTENNA a/b OUT (antenna a/b output) or ANTENNA c/d IN (antenna c/d input) connectors (BNC-R)

Connect additional DWR-R03D units to either ANTENNA a/b OUT connectors, and create cascade connections of up to eight units.

You can also select the 4-channel diversity reception mode via menu operations to use these as ANTENNA c/d IN connectors. In such cases, you can connect antennas and antenna boosters, similarly to the ANTENNA a/b IN connectors.

9 REM ANT (ST remote system antenna)

This is an external antenna for the ST remote system.

10 WORD SYNC IN/OUT (sync signal input/output) connectors and 75 Ω termination switch

When you want to synchronize digital output with an external sync signal, input the external sync signal to the WORD SYNC IN connector.

The sync signal input from the IN connector is output from the OUT connector.

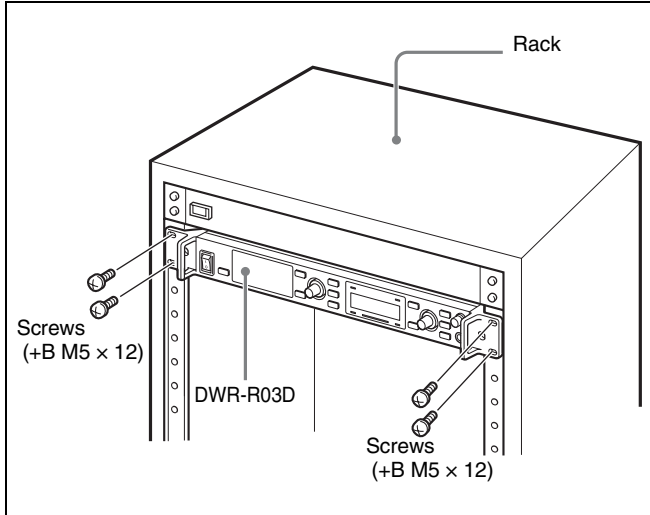
Set the 75 Ω termination switch of only the DWR-R03D unit at the end of the cascade connection to ON.

For details on connecting to the WORD SYNC connectors, see “Connection Example of Word Clock and Audio” on page 11.

Preparation

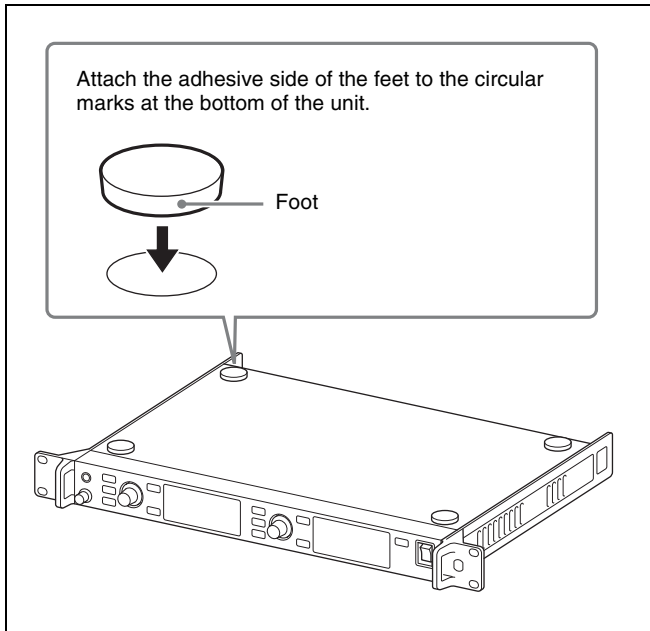
Rack Mounting

Use the EIA standard 19-inch rack (1U size) with a depth of 350 mm to install the unit.



To use the unit without installing in the rack

Attach the supplied four feet to the bottom of this unit, as illustrated below.



To install the unit in the rack, be sure to remove the attached feet.

System Configuration

You can build a multi-channel system, ST remote system, or NT remote system shown below in accordance with the scale and purpose of the system you want to build.

You can improve user-friendliness by combining a multi-channel system with a remote system.

The type and maximum number of equipment that can be included in each system are described below.

Note

When any RMU-01 unit is detected in the Ethernet connection, the system automatically operates in NT remote system mode. When no RMU-01 unit is detected, ST remote system mode is applied.

The wireless remote control function receives a change command from the receiver or RMU-01 via a 2.4 GHz signal, and replies with the metadata in the audio packet. Therefore, use the wireless remote control function where it will be within range of the audio signal from the transmitter.

	Multi-channel system	ST remote system	NT remote system
DWR-R03D	1 to 41	1 to 3	1 to 41
Sony digital wireless transmitter	1 to 82	1 to 6	1 to 82
RMU-01	Not required	Not required	1 to 9
Wireless Studio	Can be used to monitor the status of receivers, transmitters, and RMUs		

Using the Supplied Antennas

To maximize the reception performance of this unit, we recommend using optional AN-820A or AN-01 UHF antennas.

For narrow service areas, however, you can also use the supplied whip antennas.

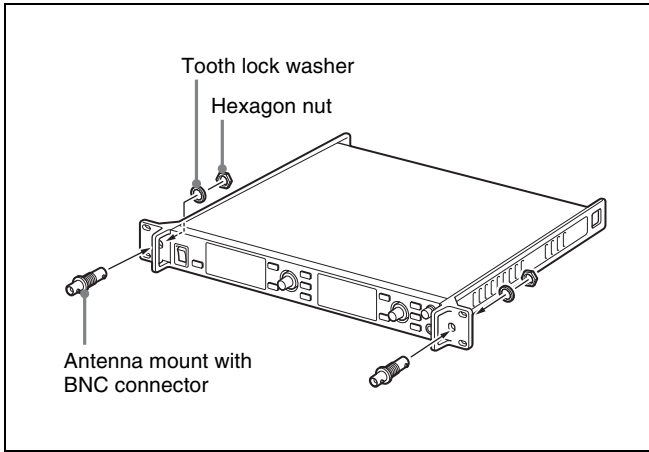
Note

When using the supplied whip antennas, be sure to verify your service area beforehand.

The supplied whip antennas can be attached to the front or rear panel of the unit.

Front panel attachment

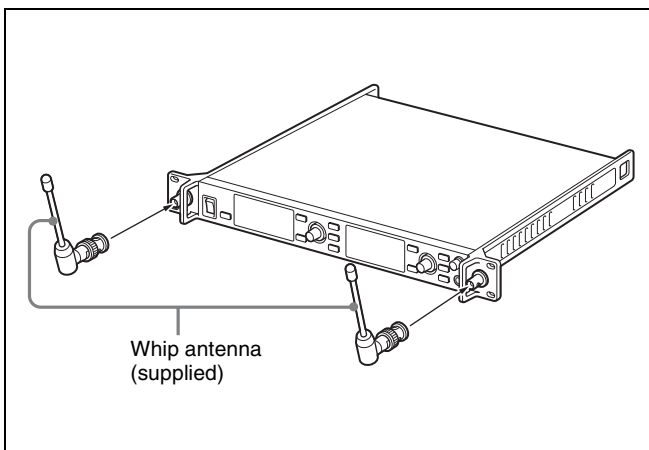
- 1 Insert commercially available antenna mounts with BNC connectors into the front panel, and secure them with hexagon nuts (14 mm).



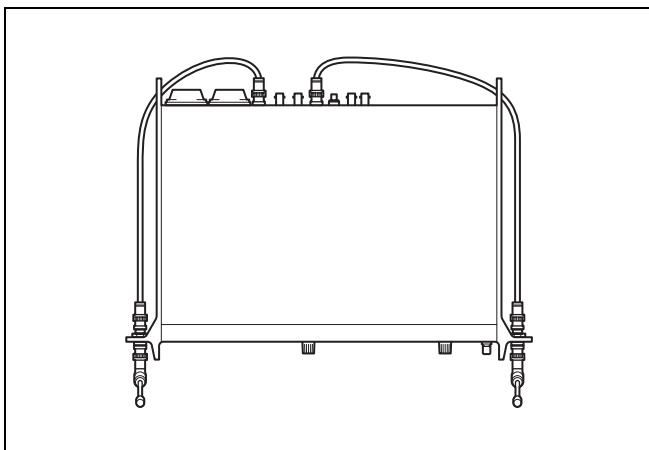
Note

You can also attach the antennas so that the hexagon nuts are located on the front side of the front panel. If you have trouble securing the hexagon nuts on the back side of the front panel, insert the antenna mounts with BNC connectors into the front panel from the back side, and secure the nuts on the front side.

2 Attach the supplied whip antennas.

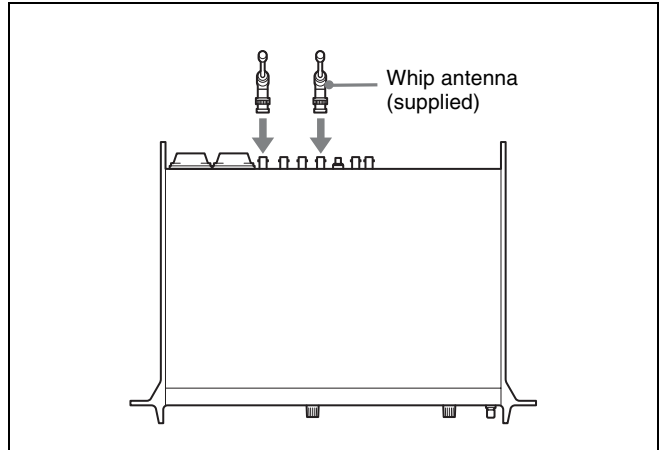


3 Use commercially available BNC cables (50 Ω, 60 cm or longer) to connect the antenna mounts with BNC connectors to the ANTENNA a/b IN connectors on the rear panel of the unit.



Rear panel attachment

Attach the supplied whip antennas to the ANTENNA a/b IN connectors on the rear panel.



Connection Example of Word Clock and Audio

For digital audio output to be performed correctly, it is necessary to connect a device incorporating a sampling rate converter to the DIGITAL OUT connector of the receiver or input a master word clock signal to the WORD SYNC IN connector of the receiver and perform synchronization.

There are the following two types of system for inputting a master word clock signal to perform synchronization.

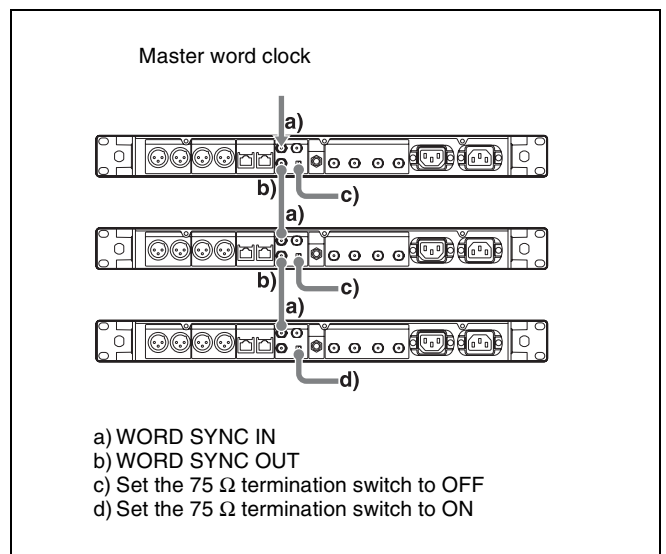
Note

If the number of connected devices is high, we do not recommend cascade connections. We recommend using a word clock divider.

Synchronization system example 1

This system connects the master word clock signal in cascade via the WORD SYNC OUT connector of this device.

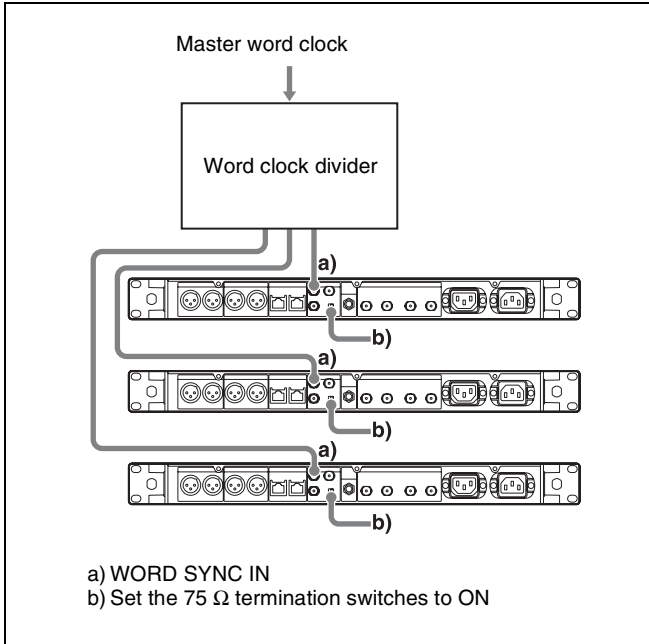
Set the 75 Ω termination switch of only the DWR-R03D unit at the end of the cascade connection to ON.



Synchronization system example 2

This system divides the master word clock signal with a divider, and then connects to each device.

Set the 75 Ω termination switches of all DWR-R03D units to ON.



Setting the Receiving Channel

The receiver provides groups of channels for interference-free transmission. When using multiple wireless microphones and transmitters (simultaneous multi-channel operations) within the same area, selecting the same group and using a channel within that group can prevent signal interference.

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

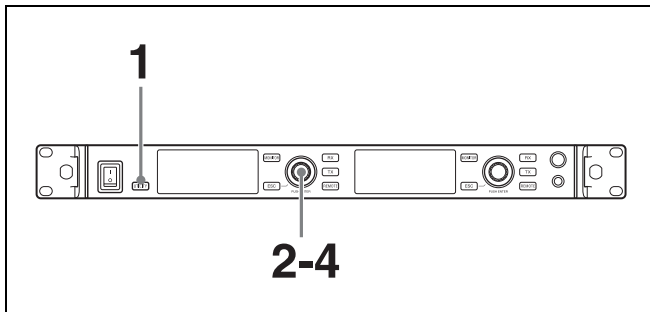
For details on menu operations, see “Basic Menu Operations” on page 18.

Selecting the Band Block

This receiver is capable of receiving signals in a wide band of frequencies. Set the band block before setting the frequency band/group/channel.

Set the band block (BAND BLOCK) as follows.

The controls for channel 1 are used in the following illustration for explanation purposes.



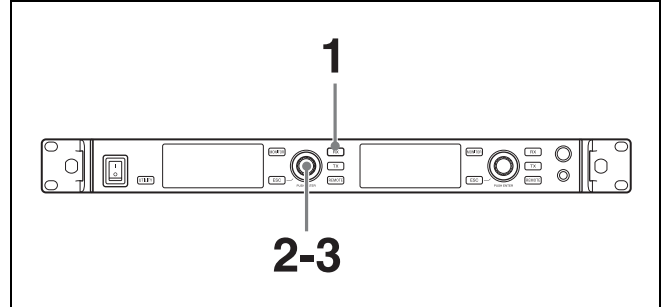
- 1** Press the UTILITY button to select the UTILITY menu.
- 2** Rotate the jog dial to move the cursor to the RF indication (the characters of the item selected with the cursor become highlighted), and then press the dial.
- 3** Rotate the jog dial to move the cursor to the BAND BLOCK indication, and then press the dial.
- 4** Rotate the jog dial to move the cursor to the band block indication that you want to select, and then press the dial.

Selecting the Frequency Band

Set the frequency band before setting the group/channel.

Set the frequency band (BAND) as follows.

The controls for channel 1 are used in the following illustration for explanation purposes.

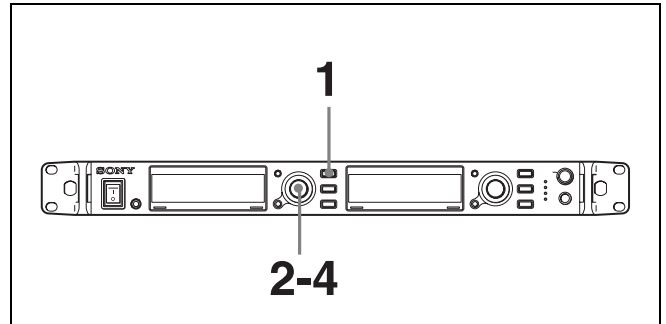


- 1** Press the RX button to select the RECEIVER menu.
- 2** Rotate the jog dial to move the cursor to the BAND indication, and then press the dial.
- 3** Rotate the jog dial to move the cursor to the frequency band indication that you want to select, and then press the dial.

Selecting the Group/Channel

Set the group (GP) and channel (CH) as follows:

In the procedure below, the controls for the receiver channel 1 are used for illustration purposes.



- 1** Press the RX button to select the RECEIVER menu.
- 2** Rotate the jog dial to move the cursor to GP/CH indication (the characters of the item selected with the cursor become highlighted), and then press the dial.
- 3** Rotate the jog dial to move the cursor to group indication that you want to select, and then press the dial.
- 4** Rotate the jog dial to move the cursor to channel indication that you want to select, and then press the dial.

When the Cross Remote is operating:

When you change the channel setting on the receiver, the new channel setting is sent to the transmitter that is paired with that receiver.

Note

If the receiving channel (CH) configured on the receiver is a channel for which use with the wireless remote control function is restricted on the transmitter side, the UNMATCH screen appears.

In such cases, change the receiving channel on the receiver. If you want to use the restricted channel, set REMOTE to OFF in the transmitter's menu to release the channel restriction, and manually configure the transmitter's channel.

About operation when using with dedicated digital channel plan

When performing multi-channel operation with a channel plan for digital only, make sure the RF indicator is always lit in green when in the operation area. The RF indicator lights in red or goes out when the reception signal input is weak, and lights in orange when it is strong.

If necessary, we recommend adjusting the gain of the connected antenna and configuring settings such as the antenna attenuator and antenna direction.

About use of the same group and channel by adjacent systems

When the same group and channel are being used by two or more systems that are within sight of each other and are separated without partitions or obstacles in wide open place, each system should be at least 100 meters away from the others to avoid interference.

Using the Active Channel Scan Function

This function scans for a Sony digital wireless frequency from the channel lists within the GP (group) selected during the GP/CH selection function.

Required condition for the detection:

- Sony digital wireless signal
- The setting of the encrypted transmission function is correct.

- 1 Press the RX button to select the RECEIVER menu.
- 2 Rotate the jog dial to move the cursor to ACTIVE CH SCAN indication, and then press the dial.

A message "START SCAN?" appears.

- 3 Rotate the jog dial to select YES, and then press the dial.

Scanning starts. When a Sony digital wireless frequency is detected, scanning stops and the frequency is displayed.

If you select NO in this step

The scanning function is cancelled.

- 4 If you decide to use that channel, rotate the jog dial to select SET, and then press the dial.

To search for another frequency

Rotate the jog dial to select CONTINUE, and then press the dial.

Note

If a Sony digital wireless frequency within the group is not found by the second try, scanning is cancelled.

Using the Clear Channel Scan Function

This function searches for a channel that is not being used by another wireless device or by a TV station. This function makes it easy to find an available channel to allow the wireless microphone to be used without interference. The function searches for empty channels among the registered channels within the channel group selected by the GP/CH selection function, and lists the detected channels in the order with less interference.

- 1 Press the RX button to select the RECEIVER menu.
- 2 Rotate the jog dial to move the cursor to CLEAR CH SCAN indication, and then press the dial.

A message "START SCAN?" appears.

- 3 Rotate the jog dial to select YES, and then press the dial.

Scanning starts. Empty channels within the specified channel group (GP) are searched. When scanning finishes, detected empty channels are listed in the order with less interference.

- 4 Rotate the jog dial to select the channel that you want to use, and then press the dial.

When the Cross Remote is operating:

When the jog dial is pressed in Step 4 above, a message confirming to apply the selected channel to the transmitter that is paired with the unit appears.

When you rotate the jog dial and select OK and press the dial, the selected channel is applied to the transmitter.

Notes

- If an empty channel within the group is not found by the second try, scanning is cancelled.
- If the receiving channel (CH) configured on the receiver is a channel for which use with the wireless remote control function is restricted on the transmitter side, the UNMATCH screen appears.

In such cases, change the receiving channel on the receiver. If you want to use the restricted channel, set REMOTE to OFF in the transmitter's menu to release the channel restriction, and manually configure the transmitter's channel.

Using the Encrypted Transmission Function

This receiver is capable of receiving scrambled signals from Sony digital wireless transmitters. This function prevents hacking of the signal.

To use this function, select one of the following encrypted transmission modes:

Secure key modes (SECURE KEY / AES256): A secure 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: You choose a password of up to eight characters that can be set for multiple transmitters and receivers. This enables encrypted transmission to be conducted within a group.

Notes

- Make sure the same mode is set on the transmitter and receiver.
- When using an encryption key method, pair the transmitter and receiver.

Using the Secure Key Modes (SECURE KEY/AES256)

Use these modes for one-to-one encrypted transmission between one transmitter and one receiver.

An encryption key that cannot be read from the outside is automatically generated by the transmitter. This key is transmitted to the receiver through the wireless remote control function, enabling encrypted transmission to take place.

The encryption key used by the transmitter and receiver is newly generated for each key transmission, resulting in highly secure communication.

The encryption key used between the transmitter and the receiver is saved when the power is turned off, so the encrypted transmission can be resumed the next time the power is turned on.

1 Preparing the transmitter

Set SECURE KEY or AES256 on the transmitter that will transfer the encryption key.

For details on transmitter operations, refer to the operating instructions supplied with the transmitter.

2 Preparing the receiver (this unit)

- ① In the RECEIVER menu, rotate the jog dial to move the cursor to ENCRYPTION indication, and then press the dial.

- ② Rotate the jog dial to select SECURE KEY or AES256, and then press the dial.

Note

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

For details on the transmitter's encrypted transmission function, refer to the transmitter's operating instructions.

3 Exchanging the encryption key

The receiver searches for a transmitter that it has been paired with. After the receiver detects the transmitter, the transmitter exchanges the encryption key with the receiver and encrypted transmission begins.

Note

When the RF REMOTE function is off, encryption key exchange cannot be carried out.

- 6 On the transmitter, set the same password that was set on the receiver.

For details on transmitter operations, refer to the operating instructions supplied with the transmitter.

Note

It is recommended that you change the password periodically.

Using Password Mode (PASSWORD)

Set this mode when multiple transmitters are paired with multiple receivers for encrypted transmission.

If the transmitters and receivers are set with the same user-designated password, the audio signal can be decoded. This mode is useful when multiple transmitters and receivers are used as a single group, or when the audio signal from one transmitter is received by multiple receivers at the same time.

- 1 In the RECEIVER menu, rotate the jog dial to move the cursor to ENCRYPTION indication, and then press the dial.
- 2 Rotate the jog dial to select PASSWORD, and then press the dial.
- 3 Enter a password of up to 8 characters on the receiver.

Rotate the jog dial to move the cursor to select the character that you want to enter. And then, press the dial to add the selected character to the end of the current password.

To delete the last character in the current password

Rotate the jog dial to select BS, and then press the dial. Note that the adding or deleting a character in the middle of the password cannot be done.

To cancel entering the password

Rotate the jog dial to select CANCEL, and then press the dial.

- 4 After entering the characters, rotate the jog dial to move the cursor to select OK, and then press the dial.
- 5 Set the encrypted transmission function on the transmitter to PASSWORD.

Setting the Audio Codec Mode

This receiver has three audio codec modes. Switch between them based on your operational needs.

MODE1: This audio codec mode is compatible with the first generation DWX series. When the reception frequency is set to Type B, MODE1 is selected automatically.

MODE2: This audio codec mode reduces the delay time. The delay time becomes 1.5 ms with DWR-R03D analog output.

MODE3: This audio codec mode prioritizes stable transmission performance. The delay time becomes 4.0 ms with DWR-R03D analog output.

RESERVED: Reserved for an additional mode to be added in the future. Although you can select this option, audio from the unit will not be output when it is selected.

In MODE2, the delay time becomes 1.5 ms when analog signals are output using this receiver in combination with Digital Wireless Transmitter DWT-B01N (sold separately) and Digital Wireless Microphone DWM-02N (sold separately). The amount of delay increases by approximately 1 ms during digital output because the built-in sampling rate converter operates.

- 1 Press the RX button to select the RECEIVER menu.
- 2 Rotate the jog dial to move the cursor to the CODEC MODE indication, and then press the dial.
- 3 Rotate the jog dial to move the cursor to the audio codec mode indication that you want to select, and then press the dial.

If there is a transmitter paired with this receiver at that time, the audio codec mode of the transmitter is also switched at the same time.

Menu Displays and Detailed Settings

Menu Structure and Hierarchy

Menu structure

The receiver has four kinds of menu, as follows:

RECEIVER menu

A menu that includes receiver setting functions.

TRANSMITTER menu

A menu that allows you to check the settings on the transmitter currently in communication with the receiver channel 1/2.

RF REMOTE menu

A menu that allows you to perform pairing and to make the basic setting for the wireless remote control function.

UTILITY menu

A menu that includes meter indications, network settings, and settings for the organic light-emitting diode display. The UTILITY menu settings apply to receiver channel 1 and 2.

Menu hierarchy

RECEIVER menu

- BAND
- GP/CH
- ACTIVE CH SCAN
- CLEAR CH SCAN
- ENCRYPTION
- CODEC MODE
- MAIN OUT LEVEL
- GROUND LIFT
- AF OUTPUT
- SEARCH TX
- CHANNEL LABEL

TRANSMITTER menu

- NAME
- POWER SAVE
- RF POWER
- INPUT LEVEL
- ATT
- LCF
- +48V
- TIME
- INTERNAL SG
- LOCK
- PWR SW STATE
- BATT REMAIN

RF REMOTE menu

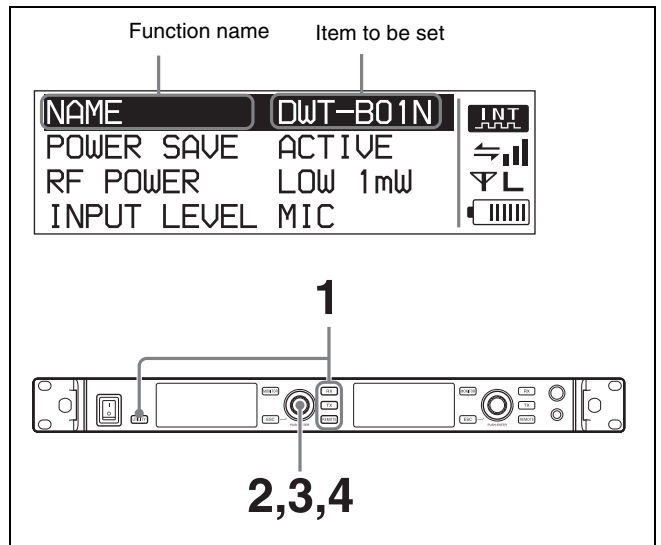
- RF REMOTE
- PAIRING
- MODE

UTILITY menu

RF	<ul style="list-style-type: none"> — DIVERSITY — BAND BLOCK — ANT ATT a — ANT ATT b — ANT ATT c — ANT ATT d — ANT DC OUT
AUDIO	<ul style="list-style-type: none"> — MONITOR MODE — SYNC SOURCE — DELAY ADJUST — AF PEAK HOLD — SUB OUT SEL
NETWORK	<ul style="list-style-type: none"> — RECEIVER NAME — NETWORK MODE — DANTE ID — RECEIVER IP — DANTE MAIN IP — DANTE SUB IP
ALERT FUNCTION	<ul style="list-style-type: none"> — RF LOW — RF OVER — QL LOW — AF PEAK — TX BATTERY LOW — ENCRYPTION UNMATCH — EXTERNAL WORD SYNC UNLOCK — CODEC MODE UNMATCH
QL ALERT SENS	
DISPLAY	<ul style="list-style-type: none"> — BRIGHTNESS — DIMMER MODE
SETTING LOCK	
USER MEMORY	<ul style="list-style-type: none"> — LOAD — SAVE
FACTORY PRESET	
VERSION	

Basic Menu Operations

In the procedure below, the controls for the receiver channel 1 are used for illustration purposes.



- 1** Press one of the menu buttons (RX, TX, REMOTE, or UTILITY button) to select the menu.
- 2** Rotate the jog dial to select the item to be set, and then press the dial.

For details on items contained in each menu, see “Menu Structure and Hierarchy” on page 17.

- 3** Rotate the jog dial to change the setting.
- 4** Press the jog dial to enter the setting.

When the Alert Indicator Lights

Indication of Other Indicators	Cause of Alert	Remedy
The AF/PEAK indicator is lit in red.	The audio input of the transmitter has exceeded the peak level.	Change the audio input attenuator of the transmitter so that the input level does not exceed the peak. The wireless remote function can be used to change the setting from the receiver.
The battery indication is flashing.	The batteries of the transmitter will run out of power soon.	Replace the batteries of the transmitter.
The number of lit indications of the QL meter has reduced.	The signal input level of the antenna has become low or the quality of the reception signal has become low because of interfering radio waves (interference).	<p>(1) If the RF indicator is lit in red or off, the signal input to the antenna may be insufficient.</p> <ul style="list-style-type: none"> • Check the transmission power setting of the transmitter. • Check the receiving antenna, each device between the receiver, cable connections, and settings. • Reduce the distance between which the transmitter and receiving antenna are used. <p>(2) If the number of lit indications of the QL meter has reduced even though the RF indicator is lit green, there may be interference.</p> <ul style="list-style-type: none"> • Check whether there is a problem with the operation channel plan. • Check whether another external signal is in use. <p>(3) You can change the criteria for lighting the ALERT indicator by specifying the level at which the quality of the received signal is determined to be low.</p>
The RF indicator is lit in orange.	The signal input level of the antenna is 87 dB μ or higher.	Multi-channel synchronous operation may be affected. Try one of the following. <ul style="list-style-type: none"> • Try using the transmitter located away from the antenna. • Increase the ANT ATT a/b/c/d setting value of the receiver. If the ANT ATT a/b/c/d setting value is increased, be sure to also check the transmission distance limit between the transmitter and receiver.
The RF indicator is lit in red or off.	The signal input level of the antenna is barely enough for reception or reception is not possible.	<ul style="list-style-type: none"> • Check the transmission power setting of the transmitter. • Check the receiving antenna, each device between the receiver, cable connections, and settings. • Reduce the distance between which the transmitter and receiving antenna are used.
The key icon is flashing on the audio input level meter.	The encrypted transmission settings on the transmitter and receiver do not match.	Set the encrypted transmission settings on the transmitter and receiver so that they match (see <i>page 15</i>).
“EXT” flashes on the digital output sync indication.	The output signal from the DIGITAL OUT connector is not synchronized to the external synchronization word clock.	<ul style="list-style-type: none"> • Check whether the synchronization signal input is connected properly. • Check whether the synchronization signal conforms to the specifications of the receiver.
CODEC MODE UNMATCH is displayed.	The audio codec mode of the transmitter and this receiver do not match.	Set the same the audio codec mode setting on the transmitter and this receiver.

Error Messages

Message	Meaning
PLL UNLOCK	PLL is unlocked.
FAN STOP	Cooling fan does not work.
PHONES OVER CURRENT	Audio output from the PHONES terminal exceeds the maximum allowable current, or the terminal has short-circuited.
ANTENNA OVER CURRENT	DC outputs from the ANTENNA IN connectors exceed the maximum allowable current, or the connectors have short-circuited.
CPU EEP ROM NG	The data of the CPU EEP ROM is not correct.
RF EEP ROM NG	The data of the RF EEP ROM is not correct.

Troubleshooting

If you encounter a problem using this receiver, use the following checklist to find a solution. For any problems with the transmitter or adapter, refer to the operating instructions supplied with the respective device. If the problem persists, consult your Sony dealer.

Symptom	Meanings	Remedy
There is no sound.	The channel setting on the transmitter is different from that on the receiver.	Use the same channel setting on both the transmitter and receiver.
	The transmitter is turned off.	Check the power supply or battery of the transmitter.
	The setting of the encrypted transmission function on the receiver is different from that on the transmitter.	Confirm that the setting of the encrypted transmission function is the same on both the transmitter and the receiver.
	The input/output status of sync signals for the WORD SYNC IN/OUT connectors do not match the 75 Ω termination switch setting.	See “ <i>Connection Example of Word Clock and Audio</i> ” on page 11, and check the connections and the 75 Ω termination switch settings.
	The audio codec mode settings on the receiver and transmitter do not match.	Configure the same audio codec mode setting for both the receiver and transmitter.
The sound is weak.	The attenuation level on the transmitter is too high.	Set the attenuator on the transmitter to an appropriate level.
There is distortion in the sound.	The attenuation level of the transmitter is zero or too low.	The input level of the transmitter is extremely high. Adjust the attenuation level on the transmitter so that there is no distortion to the sound.
	A LINE level signal is being input while the input level of the transmitter set to MIC.	Refer to the Operating Instructions supplied with the transmitter and set the input level to LINE.
There is sound interruption or noise.	The RF indicator lights up even when the transmitter is turned off.	Jamming radio waves are being received. Set the channel whose RF indicator on the receiver does not light up, and then set that same channel on the transmitter. When two or more transmitters are being used, change to another channel group that is unaffected by jamming radio waves. When doing this, the clear channel scan function is useful (see page 14).
	Two or more transmitters are set to the same channel.	It is not possible to use two or more transmitters that are set to the same channel. Refer to the Sony digital wireless frequency lists included in the supplied CD-ROM “Manuals for Digital Wireless Receiver” and reset the transmitter channel.
	The channel is not set within the same channel group.	The channel plan of the receiver use is set so that no signal interference occurs when two or more transmitters are used simultaneously. Set each transmitter to a different channel within the same channel group.
Wireless remote control is not possible.	Pairing has not been established between the transmitter and receiver.	Carry out pairing.
	The receiver is too far from the transmitter for communication to occur.	Check the wireless remote control condition indication (see page 6). If it is low, decrease the distance between the transmitter and the receiver.
	The transmitter that was paired with the receiver has been paired with another receiver.	Carry out pairing again with the transmitter that you want to control.
	The software version of the transmitter is not suitable for use with this receiver.	Refer to the transmitter software compatibility table, and confirm whether the software version of the transmitter is suitable for use with this receiver (see page 23). If it is not suitable, software update is necessary. Contact your Sony service representative.
The display is too dark.	The display brightness is set to low.	Adjust the brightness of the display.
Noise occurs in the audio for MAIN OUTPUT.	LIFT is selected for the GROUND LIFT setting.	Selecting the GROUND setting may resolve the problem.

Symptom	Meanings	Remedy
The unit is not recognized by Wireless Studio.	You are using a version of Wireless Studio that does not support this unit.	Update Wireless Studio.

Important Notes on Operation

Consumable parts

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.

Network security

Depending on the operating environment, unauthorized third parties on the network may be able to access the unit. When connecting the unit to the network, be sure to confirm that the network is protected securely.

SONY WILL NOT BE LIABLE FOR DAMAGES OR DATA LEAKS OF ANY KIND RESULTING FROM UNAUTHORIZED THIRD-PARTY ACCESS OR SECURITY PROBLEMS OF ANY KIND.

Notes on Using the Receiver

- The digital wireless microphone system product must be used within a temperature range of 0 °C to 50 °C (32 °F to 122 °F).
- Operating the receiver near electrical equipment (motors, transformers, or dimmers) may cause it to be affected by electromagnetic induction. Keep the receiver as far from such equipment as possible.
- The presence of the lighting equipment may produce electrical interference over the entire frequency range. Position the receiver so that interference is minimized.
- To avoid degradation of the signal-to-noise ratio, do not use the receiver in noisy places or in locations subject to vibration, such as the following:
 - near electrical equipment, such as motors, transformers or dimmers
 - near air conditioning equipment or places subject to direct air flow from an air conditioner
 - near public address loudspeakers
 - where adjacent equipment might knock against the tuner

Keep the receiver as far from such equipment as possible or use buffering material.

Cleaning

- If the receiver is used in a very humid or dusty place or in a place subject to an active gas, clean its surface as well as the connectors with a dry, soft cloth soon after use. Lengthy use of the receiver in such places or not cleaning it after its use in such places may shorten its life.
- Clean the surface and the connectors of the receiver with a dry, soft cloth. Never use thinner, benzene, alcohol or any other chemicals, since these may mar the finish.

Transmitter Software Version

If the software version is not suitable for use with this receiver, the wireless remote control and encrypted transmission functions may not function. Refer to the following tables for transmitter software versions that are compatible with this receiver. A software update may be necessary to enable proper functioning. For details on software updates, contact your Sony service representative.

For details on confirming the software version, refer to the operating instructions for each transmitter.

Transmitter Model No.: U3040, U4250

Model name	Software version
DWM-01	Ver 1.12 or later
DWT-B01/DWT-P01 (Serial No. 10999 or below)	Ver 1.22 or later
DWT-B01 (Serial No. 11001 or above)	Ver 2.13 or later
DWT-P01 (Serial No. 11001 or above)	Ver 2.12 or later

Transmitter Model No.: Other

Model name	Software version
DWM-01	Ver 1.12 or later
DWT-B01	Ver 2.13 or later
DWT-P01	Ver 2.12 or later

Audio degradation due to weak reception

In a digital wireless system, sound quality is maintained up to the maximum transmission range. Beyond this point, as the radio wave becomes weaker, data synchronization is lost and the connection finally breaks. Sony digital wireless systems suppress the occurrence of large noise between these two points as the signal weakens. As a result, digital processing is conducted in a way that allows the signal to degrade in a very natural way.

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.

Licenses

This product uses μ T-Kernel source code based on T-License 2.0 from T-Engine Forum (<http://www.t-engine.org>).

This product may include software (including open source software) licensed under terms specified by owners other than Sony.

For details on the terms of use for such third-party software, refer to the source codes, text, and files stored on the supplied "OSS Technical Information for Digital Wireless Receiver" CD-ROM.

Specifications

Receiving Section

Receiver Type	Rackmount (2 channels)
Transmission Method	WiDIF-HP (×2)
Reception Type	True diversity
Circuit System	Double superheterodyne
Local Oscillators Type	Crystal-controlled PLL synthesizer
Antenna Type	Detachable
RF Sensitivity	20 dB μ or less (at bit error rate = 1×10^{-5} , no decline in S/N ratio)

Antenna Section

Antenna Connector	2 DIVERSITY: Input: BNC-R, 50 Ω (2) Cascade output: BNC-R, 50 Ω (2)
	4 DIVERSITY: Input: BNC-R, 50 Ω (4)
Supply Voltage for Booster	0 V/9 V/12 V
Attenuator	0 dB/3 dB/6 dB/9 dB/12 dB

Audio section

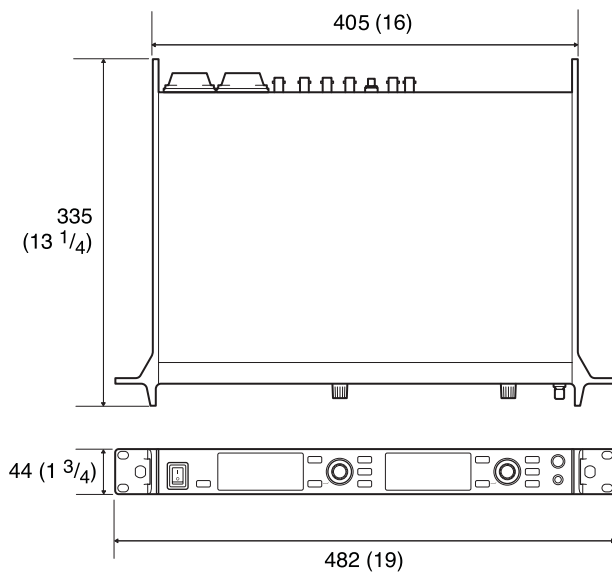
Dynamic Range	106 dB or more (A-weighted)
Distortion (T.H.D)	MODE1, MODE2: 0.03% or less MODE3: 0.3% or less
Audio Delay	MODE1: 1.9 ms (analog output), 1.9 ms (digital output) MODE2: 0.5 ms (analog output), 1.5 ms (digital output) MODE3: 1.9 ms (analog output), 2.8 ms (digital output)
Main Output	XLR-3-32, 150 Ω or less (2) Output level (0 dBu = 0.775 Vrms) Max: +24 dBu; Reference: -58 dBu to -12 dBu (1 dB steps)
Sub Output	XLR-3-32 (digital/analog switchable) (2) Digital: 110 Ω Reference output level: -36 dBFs Analog: 47 Ω or less Output level (0 dBu = 0.775 Vrms) Max: +24 dBu; Reference: -12 dBu
Digital Output	BNC-R, 75 Ω (1) Reference output level: -36 dBFs
Headphone Output	ϕ 6.3 mm ($\frac{1}{4}$ inch) stereo jack

Other Equipment

Word Sync	Input connector: BNC-R with a 75 Ω termination switch Output connector: BNC-R External Word Sync: 32 kHz to 96 kHz
Wireless Remote Control	Cross Remote (2.4-GHz IEEE802.15.4 compliant)
LAN Connector	RJ-45 modular jack (2) 1000BASE-T: IEEE802.3ab compliant 100BASE-TX: IEEE802.3u compliant 10BASE-T: IEEE802.3 compliant Dante Digital Audio
Display	OLED

General

Power Requirements	AC: 100 V to 240 V 0.4 A or less Input (1), Cascade output (1)
Power Consumption	AC: 34 W
Operating Temperature	0 °C to 50 °C (32 °F to 122 °F)
Storage/Transport Temperature	-20 °C to +60 °C (-4 °F to +140 °F)
Dimensions (unit: mm (inches))*	



* The values for dimensions are approximate.

Mass	Approx. 3.9 kg (8 lb 10 oz) (including the attached antenna)
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Supplied Accessories

- Whip antenna (2)
- AC power cord
 - For US models: Part No. 1-551-812-1x (Sony) (1)
 - For Europe models: Part No. 1-551-631-2x (Sony) (1)
- Cascading power cord (Part No. 1-912-652-1x) (Sony) (1)
- Plug holder (2)

- Foot (4)
- Before Using This Unit (3)
- Operating Instructions (CD-ROM) (1)
- Open source software technical information (CD-ROM) (1)
- Warranty card (US models only) (1)

Design and specifications are subject to change without notice.

Notes

- Always verify that the unit is operating properly before use. SONY WILL NOT BE LIABLE FOR DAMAGES OF ANY KIND INCLUDING, BUT NOT LIMITED TO, COMPENSATION OR REIMBURSEMENT ON ACCOUNT OF THE LOSS OF PRESENT OR PROSPECTIVE PROFITS DUE TO FAILURE OF THIS UNIT, EITHER DURING THE WARRANTY PERIOD OR AFTER EXPIRATION OF THE WARRANTY, OR FOR ANY OTHER REASON WHATSOEVER.
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Carrier Frequencies and Channel Steps

Underlined items are the factory setting.

US models

Channel step: 25 kHz

Model No.	BAND BLOCK	Frequency band	Frequency	Group/channel (factory setting)
W	<u>TV14-25</u>	TV14-17	470.125-493.875 MHz	<u>00 1801 494.125MHz</u>
		<u>TV18-21</u>	494.125-517.875 MHz	
		TV22-25	518.125-541.875 MHz	
	TV26-38	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	

European models

Channel step: 25 kHz

Model No.	BAND BLOCK	Frequency band	Frequency	Group/channel (factory setting)
W	<u>TV21-29</u>	<u>TV21-23</u>	470.025-494.000 MHz	<u>00 2101 470.125MHz</u>
		TV24-26	494.025-518.000 MHz	
		TV27-29	518.025-542.000 MHz	
	TV30-41	TV30-32	542.025-566.000 MHz	
		TV33-35	566.025-590.000 MHz	
		TV36-38	590.025-614.000 MHz	
		TV38-40	606.025-630.000 MHz	
		TV41	630.025-638.000 MHz	
	TV42-51	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	

