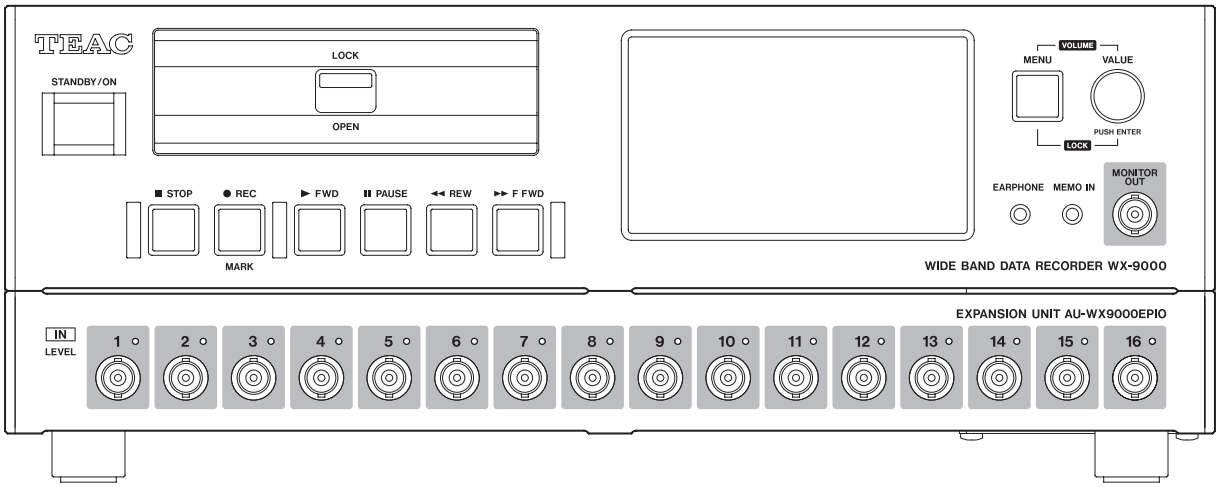
TEAC

D01443010A

WX-9000

WIDE BAND DATA RECORDER
Instructions for Use



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Contents

Thank you for purchasing the WX-9000.
Please read this document in its entirety before using the product to get the best performance and ensure safe and proper operation.

1-1. Disclaimers

Information is given about products in this manual only for the purpose of example and does not indicate any guarantees against infringements of third-party intellectual property rights and other rights related to them. TEAC Corporation will bear no responsibility for infringements on third-party intellectual property rights or their occurrence because of the use of these products.

1-2. Included accessories

If anything is missing or damaged, contact us. (For contact information, see the last page.)

For a list of included accessories, see "17-3. Included accessories" on page 80.

The AC adapters and AC power cords included with this product are designed for use with these units. Do not use them with other equipment.

1-3. Overview

Recording with wide bandwidths, multiple channels and long durations is becoming increasingly important for measurements in the fields of space exploration, aircraft development, power generation and railways.
Moreover, as the scales of the subjects measured increase, the need has arisen for standalone data recorders that have the ability to back up irreplaceable measurement data and that can be operated easily.
The WX-9000 series of wideband data recorders fulfills these needs.
These systems use 2.5-inch SSDs as recording media and can record 16-bit/64-channel data in frequency bandwidths up to DC 100 kHz.
Systems with up to 128 channels can be provided using 16-channel expansion units. Furthermore, by synchronizing 2 recording units, up to 256 channels can be recorded simultaneously.
The analog-digital conversion bit depth can be set to either 16-bit or 24-bit, which allows measurements with high dynamic ranges.

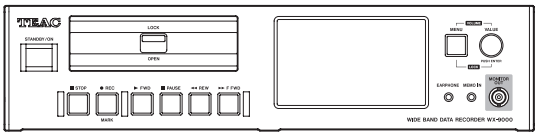
1-4. Features

- Wideband, high-resolution, multichannel stand-alone data recorders that can record 16-bit/64-channel or 24-bit/32-channel data in frequency bandwidths up to DC 100 kHz
- Wide dynamic range realized using 24-bit analog to digital conversion
- Insulation between input channels (every 2 channels)
- 2.5-inch SATA SSDs and SD cards, which are easy to obtain, used for recording media (SD adapter is optional)
- Recording up to 128 channels is possible by combining one WX-9000 recording unit with 8 AU-WX9000EPIO expansion (input/output) units
- Recording up to 256 channels is possible by synchronizing 2 systems
- High-speed data transmission with computers using Gigabit Ethernet is possible, and direct recording to computers is also possible
- WX9K Navi application available for settings and waveform display
  This can be downloaded from the data recorder website of our Information Products Division,
  https://datarecorder.jp/en/
- TAFFmat data format used
- Easy-to-read 480×272 4.3-inch TFT color touchscreen display enables intuitive operation
- Voice memo recording and playback
- Stopping and starting recording and playback is possible using external contact inputs
- Files are saved regularly, preventing data loss due to, for example, unexpected power interruptions
- DC input and IEPE sensor input can be used for analog input
- Signal line interruption detection function for each channel when using IEPE sensors
- Reads IEPE sensor TEDS information
- Analog monitoring output is possible during recording and playback
- Installation is made more flexible using distributed placement with expansion units connected by cables (optional)

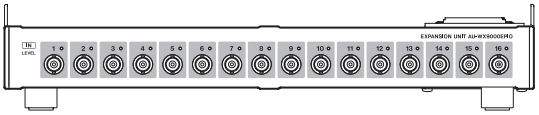
1-5. System configurations

This system is composed of a WX-9000 recording unit and one or more AU-WX9000EPIO expansion units.

WX-9000 recording unit

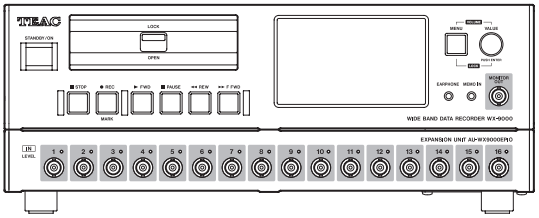


AU-WX9000EPIO expansion units

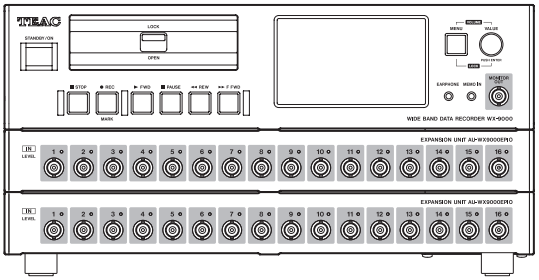


By adding more AU-WX9000EPIO expansion units, the numbers of input/output channels can be increased 16 at a time.
Some combination examples follow.

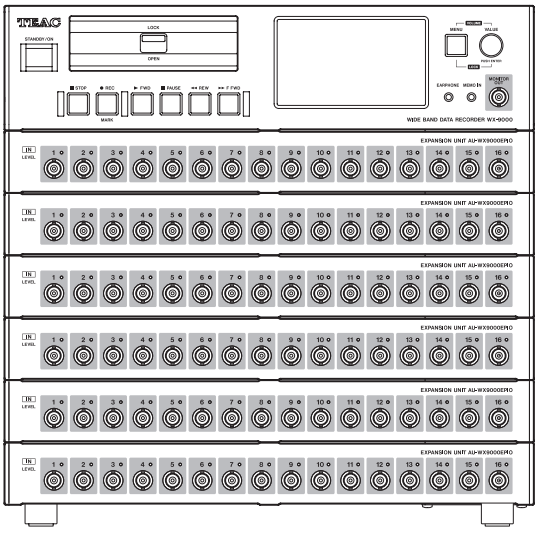
16-channel model



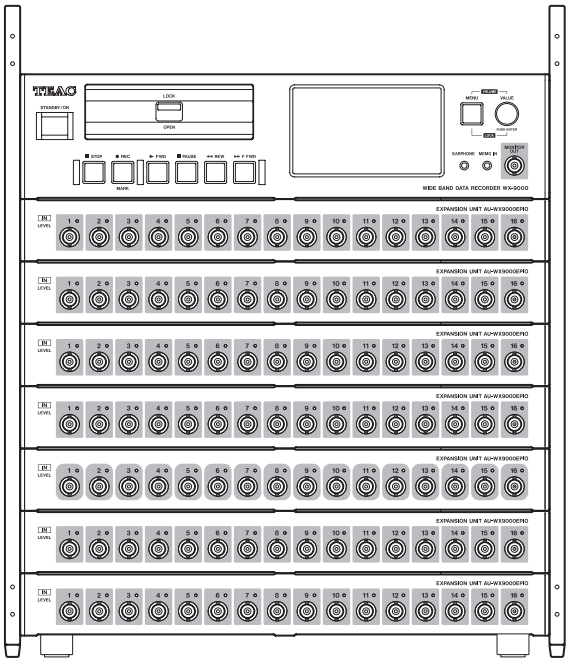
32-channel model



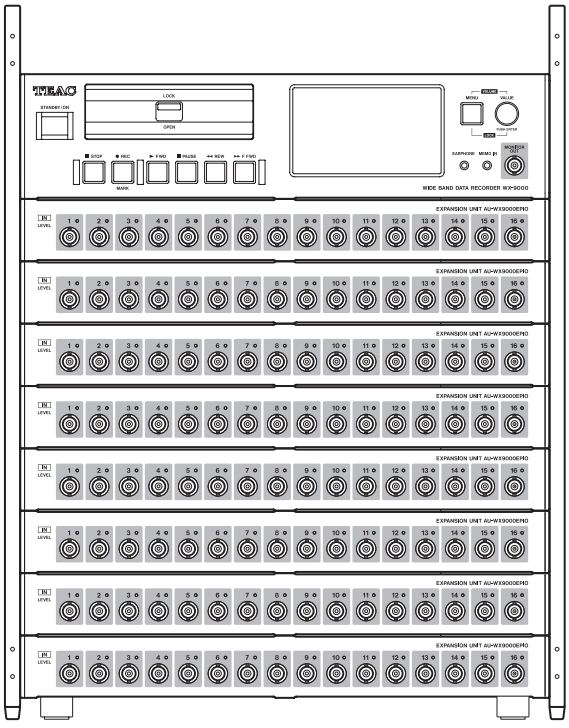
96-channel model



112-channel model



128-channel model



- When multiple AU-WX9000EPIO expansion units are connected, channel numbering starts with channel 1 at the top left and ends with the last channel (32, 48 or 64) at the bottom right.
- The 112-channel and 128-channel models include side frames.

1-6. Recording media

1-6-1. SSD cartridges

Compatible media
2.5-inch SATA SSD

Recording capacity
1 TB – 4 TB

1-6-2. SD adapters

Compatible media
SDHC/SDXC cards

Recording capacity
32 GB – 128 GB

Recommended speed class
Class 10

- The numbers of channels that can be recorded simultaneously differ between SSDs and SD cards. See page 77 for details.

1-6-3. Media that has been verified to operate with this system

We provide a list of media that we have verified for operation with this unit on our Information Products Division data recorders website.

https://datarecorder.jp/en/

You can also contact us. (For contact information, see the last page.)

- Prepare media for use only with the WX-9000.
- To ensure stable recording, try to keep the total quantity of recorded data to 1000 or less. Moreover, before recording, confirm that the recording media has enough open space.
- Do not use a computer to delete, move or otherwise alter data recorded on the media. Doing so could cause the WX-9000 to become unable to properly record or play data.
- If the media contains a large amount of recording data, some time might be necessary before use is possible after the WX-9000 is started or the media is installed.

1-7. TAFFmat format

1-7-1. File types

The WX-9000 makes a binary-format data file and ASCII-format header file each time recording stops or pauses.

Data file:	Contains data converted from analog to digital, etc. Binary format with "DAT" file extension
Header file:	Contains recording conditions and other information Text (ASCII) format with "HDR" file extension
Voice memo file*:	Contains voice memo data WAV format with "WAV" file extension
GPS file*:	Contains GPS data "GPS" file extension ● No data will be recorded if no GPS receiver is connected or if the GPS baud rate is not suitable.
Index file:	Contains recording conditions and other information Text (ASCII) format with "HDX" file extension

*Files are created when recorded.

1-7-2. File name

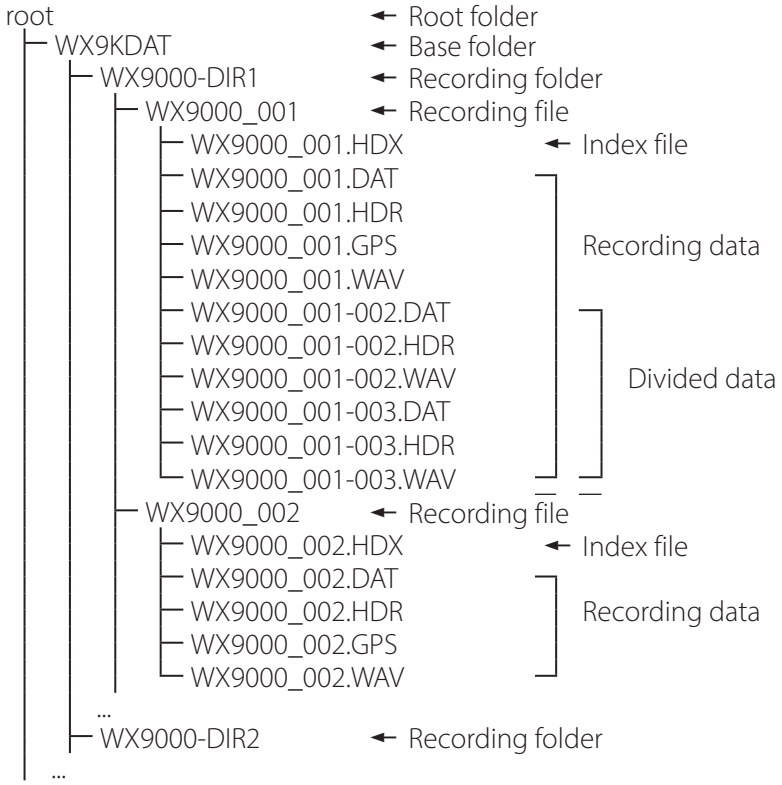
The file name is common to the data file and header file. An ID number is added to the end of the specified file name. When you specify a new file name, the ID number starts from 1. After recording is stopped or paused, the ID number is automatically incremented each time the recording restarts. If a data file with the same name or same ID number already exists when recording, the next ID number will be used.
Set the file name on the "Recording file settings" screen. For the file name, use up to 29 characters. ID numbers (starting from 001) with the set number of digits are attached to file names.
When recording to a WX, the number of digits is fixed to 3, and the maximum number of characters is 32.
When recording to a computer, the number of digits can be set from 3 to 5, and the maximum number of characters is 32–34.

● If the ID number exceeds the set number of digits, recording will stop.

1-7-3. Media folder structures

Folder type	Name	Details
Base folder	WX9KDAT	This is created in the root folder. Data is managed inside it. The name is fixed.
Recording folders	Name as assigned (Example: WX9000-DIR1)	These are created in the base folder. Their names can be set as desired.
Recording files	Name as assigned (Example: WX9000_)	These are created in recording folders. Their names can be set as desired. Each time recording starts, a folder is created with a suffix added automatically (3 digits for WX or 3–5 for PC).
Recording data	Same as recording file	When a recording is divided at 4 GB, a - followed by a three-digit suffix will be added to the name.

Folder structure example

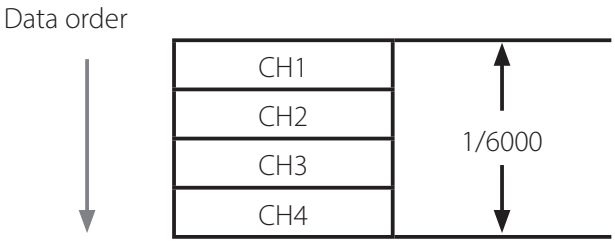


When saving recording data on a computer, the data will be saved in the set recording folder in the base folder.

1-7-4. Data file

16-bit data converted from analog to digital is recorded as 2-byte integer values from -32768 to +32767 while 24-bit converted data is recorded as 4-byte integer values from -8388608 to +8388607. Negative numbers are shown using two's-complement notation.
The byte order is from the lowest to the highest (Intel format).
The data order is from the first sampling channel to the second sampling channel and so on until the last sampling channel. This order is called the INTERLACED format, and the format name is recorded in STORAGE_MODE in the header file.
The structure of a data file is as follows. In this document, a collection of data as shown in the example is called a "scan". A data file is made of repeated scans.

Example of data for one scan recorded at 6kHz sampling frequency



1-7-4-1. Converting data to physical quantities

16-bit data converted from analog to digital is recorded as integer values from -32768 to +32767 and the value would be ±25000 when the input is ±100% in the input range settings. 24-bit converted data is recorded as integer values from -8388608 to +8388607 and the value would be ±6400000 when the input is ±100% in the input range settings. The input value is obtained from the following formula:

Input value = (A/D conversion value of the data file) × SLOPE + Y_OFFSET

● See "Explanations of header file" on page 12 for information about SLOPE and Y_OFFSET.

1-7-5. Header file

Header files are ASCII-format text files containing information such as recording conditions.
In a header file, each recording-condition entry is written on 1 line, with parameters separated by a comma (,). An example of a header file is shown as follows.

Example of header file

DATASET WX9K_001
VERSION 1
SERIES CH1_WX9K_PAAMP,CH2_WX9K_PAAMP,CH3_WX9K_PAAMP,CH4_WX9K_PAAMP,CH5_WX9K_PAAMP,CH6_WX9K_PAAMP,CH7_WX9K_PAAMP,CH8_WX9K_PAAMP,CH9_WX9K_PAAMP,CH10_WX9K_PAAMP,CH11_WX9K_PAAMP,CH12_WX9K_PAAMP,CH13_WX9K_PAAMP,CH14_WX9K_PAAMP,CH15_WX9K_PAAMP,CH16_WX9K_PAAMP
DATE 09-26-2024
TIME 17:39:46.00
RATE 192000
VERT_UNITS V,V,V,V,V,V,V,V,V,V,V,V,V,V,V,V
HORZ_UNITS Sec
COMMENT WX-9000
NUM_SERIES 16
STORAGE_MODE INTERLACED
FILE_TYPE LONG
SLOPE 1.562500e-07,1.562500e-07,1.562500e-08,1.562500e-07,1.562500e-07,1.562500e-07,1.562500e-07,1.562500e-07,1.562500e-07,1.562500e-07,1.562500e-07,1.562500e-07,1.562500e-07,1.562500e-07,1.562500e-07,1.562500e-07
X_OFFSET 0.0
Y_OFFSET 0.000000e+000,0.000000e+000,0.000000e+000,0.000000e+000,0.000000e+000,0.000000e+000,0.000000e+000,0.000000e+000,0.000000e+000,0.000000e+000,0.000000e+000,0.000000e+000,0.000000e+000,0.000000e+000,0.000000e+000,0.000000e+000
NUM_SAMPS 1163264
DATA
DEVICE WX-9000
SLOT1 PA_AMP,MAXCH=16,REV=0
CH1_1 WX9K_PAAMP,RANGE=1V,COUPLING=DC,IEPE=OFF,WEIGHTING=FLAT,HPF=OFF
CH2_2 WX9K_PAAMP,RANGE=1V,COUPLING=DC,IEPE=OFF,WEIGHTING=FLAT,HPF=OFF
CH3_3 WX9K_PAAMP,RANGE=0.1V,COUPLING=AC,IEPE=OFF,WEIGHTING=FLAT,HPF=OFF
CH4_4 WX9K_PAAMP,RANGE=1V,COUPLING=DC,IEPE=OFF,WEIGHTING=FLAT,HPF=OFF
CH5_5 WX9K_PAAMP,RANGE=1V,COUPLING=DC,IEPE=OFF,WEIGHTING=FLAT,HPF=OFF
CH6_6 WX9K_PAAMP,RANGE=1V,COUPLING=DC,IEPE=OFF,WEIGHTING=FLAT,HPF=OFF
CH7_7 WX9K_PAAMP,RANGE=1V,COUPLING=DC,IEPE=OFF,WEIGHTING=FLAT,HPF=OFF
CH8_8 WX9K_PAAMP,RANGE=1V,COUPLING=DC,IEPE=OFF,WEIGHTING=FLAT,HPF=OFF
CH9_9 WX9K_PAAMP,RANGE=1V,COUPLING=DC,IEPE=OFF,WEIGHTING=FLAT,HPF=OFF
CH10_10 WX9K_PAAMP,RANGE=1V,COUPLING=DC,IEPE=OFF,WEIGHTING=FLAT,HPF=OFF
CH11_11 WX9K_PAAMP,RANGE=1V,COUPLING=DC,IEPE=OFF,WEIGHTING=FLAT,HPF=OFF
CH12_12 WX9K_PAAMP,RANGE=1V,COUPLING=DC,IEPE=OFF,WEIGHTING=FLAT,HPF=OFF
CH13_13 WX9K_PAAMP,RANGE=1V,COUPLING=DC,IEPE=OFF,WEIGHTING=FLAT,HPF=OFF
CH14_14 WX9K_PAAMP,RANGE=1V,COUPLING=DC,IEPE=OFF,WEIGHTING=FLAT,HPF=OFF
CH15_15 WX9K_PAAMP,RANGE=1V,COUPLING=DC,IEPE=OFF,WEIGHTING=FLAT,HPF=OFF
CH16_16 WX9K_PAAMP,RANGE=1V,COUPLING=DC,IEPE=OFF,WEIGHTING=FLAT,HPF=OFF
REC_MODE WX
END_TIME 09-26-2024 17:39:52
START_TRIGGER COMMAND
STOP_CONDITION COMMAND
VOICE_MEMO 8BITS,52044
TIMEZONE UTC+9:00
SCAN_CLOCK 192000
START_SCAN 4177920
WX-9000_VERSION MAIN_FIRM:1.0.0.0,MAIN_GUI:1.0.0.0,MAIN_RTOS:1.0.0.0,MAIN_FPGA:1.0.0.0,MAIN_PLD:1.0.0.0,AMP1_FIRM:1.0.0.0,AMP1_FPGA:1.0.0.0,00022EE0E000,PC,APP:,DLL:0.0.0
WX-9000_SERIAL MAIN:WX90000,AMP1:AU90000

Explanations of header file

DATASET	File name	
VERSION	1 (This is a fixed value.)	
SERIES	Name of each channel	
DATE	Date when recording started (month-day-year)	
TIME	Time when recording started (hour: minute: second)	
RATE	Sampling frequency (Unit: Hz)	
VERT_UNITS	Physical unit of each channel	
HORZ_UNITS	Time axis unit (This is a fixed to Sec.)	
COMMENT	Comment input on the "Recording file settings" screen	
NUM_SERIES	Number of recording channels	
STORAGE_MODE	Data order. Fixed as INTERLACED because this is the scan order.	
FILE_TYPE	In 16 bits A/D, INTEGER (1data, 2-byte integers) In 24 bits A/D, LONG (1data, 4-byte integers)	
SLOPE	Coefficient used when converting data to physical units	
X_OFFSET	Location of the first data on the time axis; normally 0 The setting value (number of seconds to three decimal places) is written in minus for the pre-trigger time. Even if you set the number of scans for Pre-trigger, this will be in seconds.	
Y_OFFSET	Offset used for converting data to physical units	
NUM_SAMPS	Number of data items recorded per channel	
DATA	The data that follows this entry is specific to this model, and it might differ from the formats of other models.	
DEVICE	WX-9000	
SLOTn	Name of installed amplifier and number of channels	
CH1_	The following information is written after the underscore: channel names and amplifier settings (input range, coupling, sensor current, weighting filter, HPF setting).	
REC_MODE	Recording destination device	
END_TIME	Recording end time	
START_TRIGGER	Recording start conditions	COMMAND: Command DATE: Start time setting EXT: External trigger TIME_OUT: Timeout SYNC: Synchronized recording PRE: Added for a pre-trigger
STOP_CONDITION	Recording stop conditions	COMMAND: Command LEVEL: Level trigger TIMER: Specified recording time EXT: External trigger MEDIA FULL: When media becomes full SYNC: Synchronized recording POST: Added for a post-trigger
START_PRE_COUNT	Number of scans recorded by a pre-trigger	
STOP_POST_COUNT	Number of scans recorded by a post-trigger	
MARK	Number of scans at the instant an event mark was attached.	
VOICE_MEMO	The bits per sample and data size (bytes) for voice memos	
WX-9000_VERSION	These are the WX-9000 software versions	
WX-9000_SERIAL	These are the WX-9000 serial numbers	
DIVIDED	File division number (added when files are divided at 4GB intervals)	
SYNC	Synchronized recording setting	

Model for USA

Supplier's Declaration of Conformity

Model number: WX-9000
Trade name: TEAC
Responsible party: TEAC AMERICA,INC.
Address: 10410 Pioneer Blvd. Unit #3, Santa Fe Springs, CA 90670, U.S.A.
Telephone number: 1-323-726-0303
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Information

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CAUTION

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Model for Canada

This Class A digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

Model for Europe

DECLARATION OF CONFORMITY

This product complies with the European Directives request, and the other Commission Regulations.

DECLARACIÓN DE CONFORMIDAD

Este producto cumple con las exigencias de las directivas europeas y con los reglamentos de la Comisión Europea.

DÉCLARATION DE CONFORMITÉ

Ce produit est conforme aux directives européennes et aux autres réglementations de la Commission européenne.

KONFORMITÄTSERKLÄRUNG

Dieses Produkt entspricht den Anforderungen europäischer Richtlinien sowie anderen Verordnungen der Kommission.

Model for UK

This product complies with the applicable UK regulations.

Continued on the next page ➡

WARNING

This is a Class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

ATENCIÓN

Este es un producto de clase A. En un entorno no profesional, este aparato puede producir interferencias de radio, en cuyo caso el usuario será el responsable de tomar las medidas necesarias para solucionarlo.

AVERTISSEMENT

Il s'agit d'un produit de Classe A. Dans un environnement domestique, cet appareil peut provoquer des interférences radio, dans ce cas l'utilisateur peut être amené à prendre des mesures appropriées.

Warnung

Dies ist eine Einrichtung, welche die Funk-Entstörung nach Klasse A besitzt. Diese Einrichtung kann im Wohnbereich Funkstörungen verursachen; in diesem Fall kann vom Betreiber verlangt werden, angemessene Maßnahmen durchzuführen und dafür aufzukommen.

DISCLAIMER

TEAC disclaims all warranty, either expressed or implied, with respect to this product and the accompanying written materials. In no event shall TEAC be liable for any damages whatsoever (including, without limitation, damages for loss of business profits, business interruption, loss of business information or other loss) arising out of the use of or inability to use this product.

Disposing of this product

When disposing of this product, including accessories, consumable parts and related items, follow the regulations of the local, regional and national governments.

For European Customers

Disposal of electrical and electronic equipment and batteries and/or accumulators

a) All electrical/electronic equipment and waste batteries/accumulators should be disposed of separately from the municipal waste stream via collection facilities designated by the government or local authorities.

b) By disposing of electrical/electronic equipment and waste batteries/accumulators correctly, you will help save valuable resources and prevent any potential negative effects on human health and the environment.

c) Improper disposal of waste electrical/electronic equipment and batteries/accumulators can have serious effects on the environment and human health because of the presence of hazardous substances in the equipment.

d) The Waste Electrical and Electronic Equipment (WEEE) symbols, which show wheeled bins that have been crossed out, indicate that electrical/electronic equipment and batteries/accumulators must be collected and disposed of separately from household waste.

If a battery or accumulator contains more than the specified values of lead (Pb) and/or cadmium (Cd) as defined in the Battery Regulation (EU) 2023/1542, then the chemical symbols for those elements will be indicated beneath the WEEE symbol.

e) Return and collection systems are available to end users. For more detailed information about the disposal of old electrical/electronic equipment and waste batteries/accumulators, please contact your city office, waste disposal service or the shop where you purchased the equipment.

3. Connections

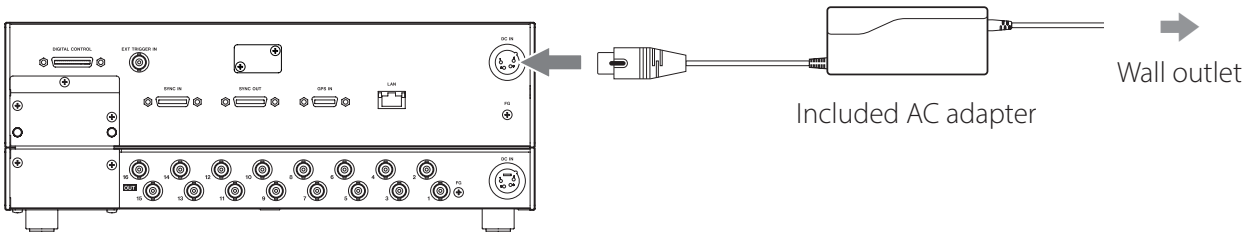
3-1. Powering the WX-9000

One included AC adapter can supply power to both the WX-9000 recording unit and two AU-WX9000EPIO expansion units.
AU-WX9000EPIO expansion units that are not connected to AC adapters receive power through stack connection adapters.
Connect AC adapters as shown in the following illustrations.

ATTENTION

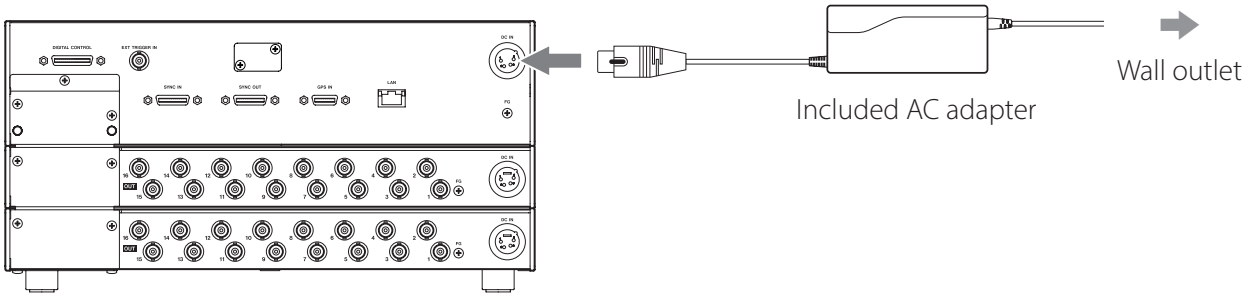
Do not supply power to AC adapters or DC INs until after securely connecting expansion units.
Before connecting or disconnecting expansion units, turn off the power to the AC adapters and DC INs.
Place AC adapter bricks away from expansion units.
When using in Japan, use the included AC cord(s) with PSE mark(s) on the plug(s).
When using in the North American region, use the included AC cord(s) with CSA mark(s) on the plug(s).

WX-9016



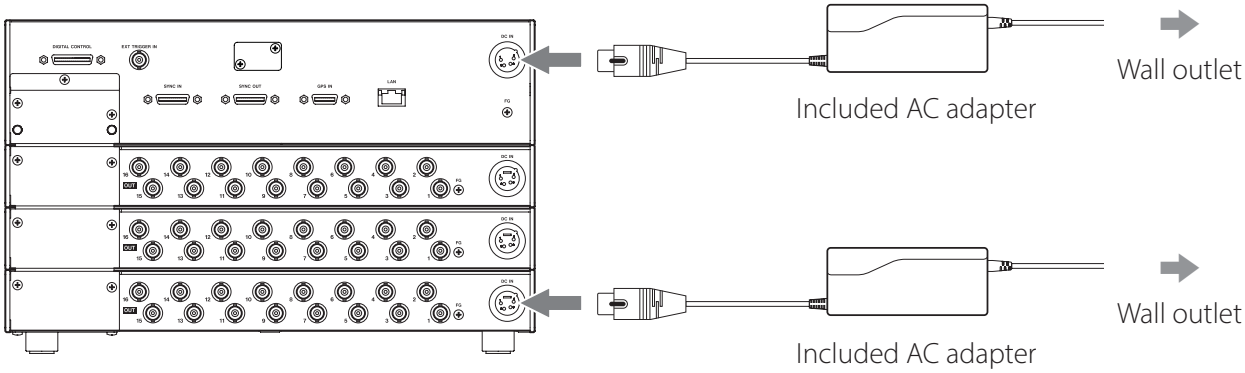
Connect the included AC adapter to the DC IN on the WX-9000.

WX-9032



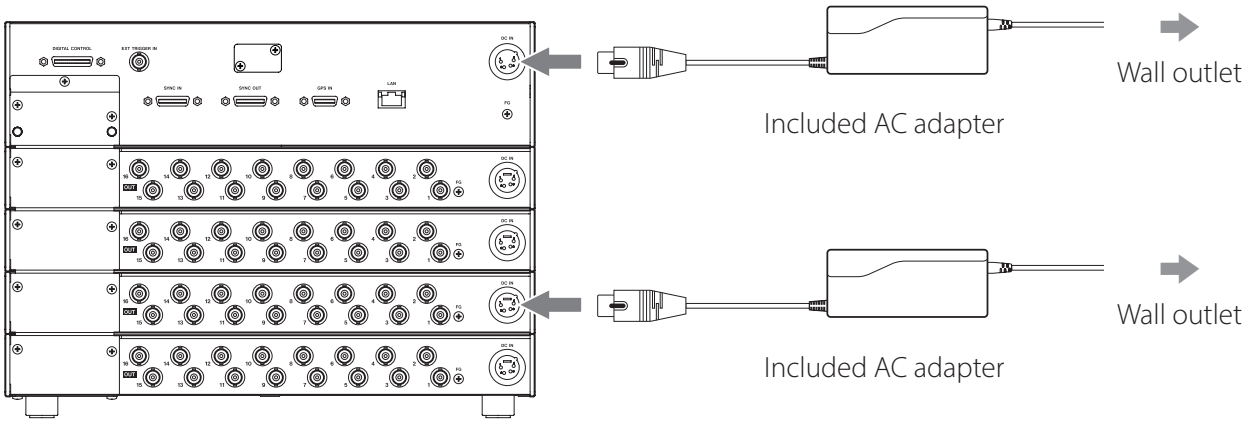
Connect the included AC adapter to the DC IN on the WX-9000.

WX-9048



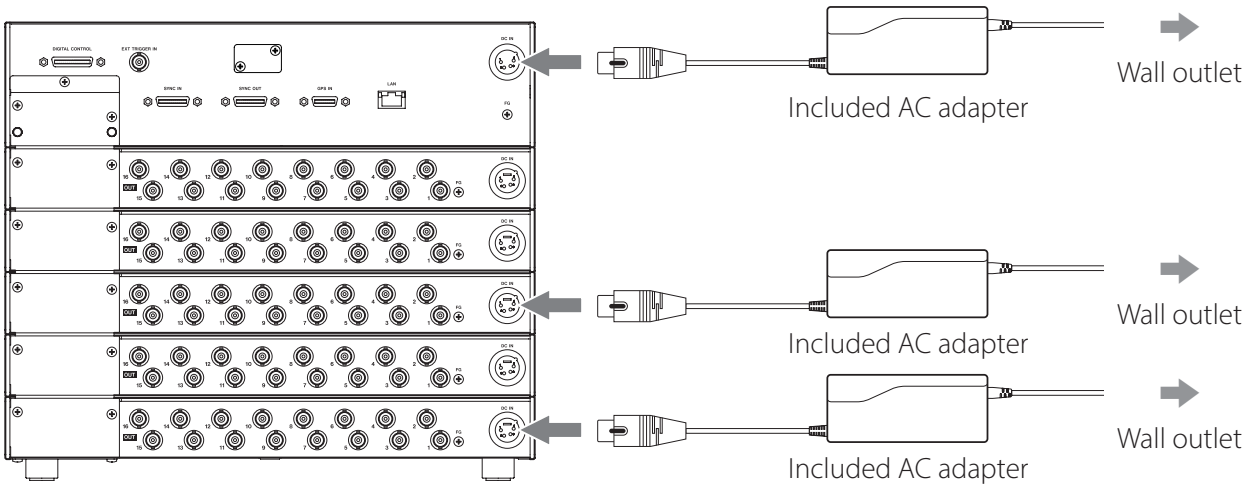
Connect one included AC adapter to the DC IN on the WX-9000 and the second included AC adapter to the DC IN on the third AU-WX9000EPIO unit from the top.

WX-9064

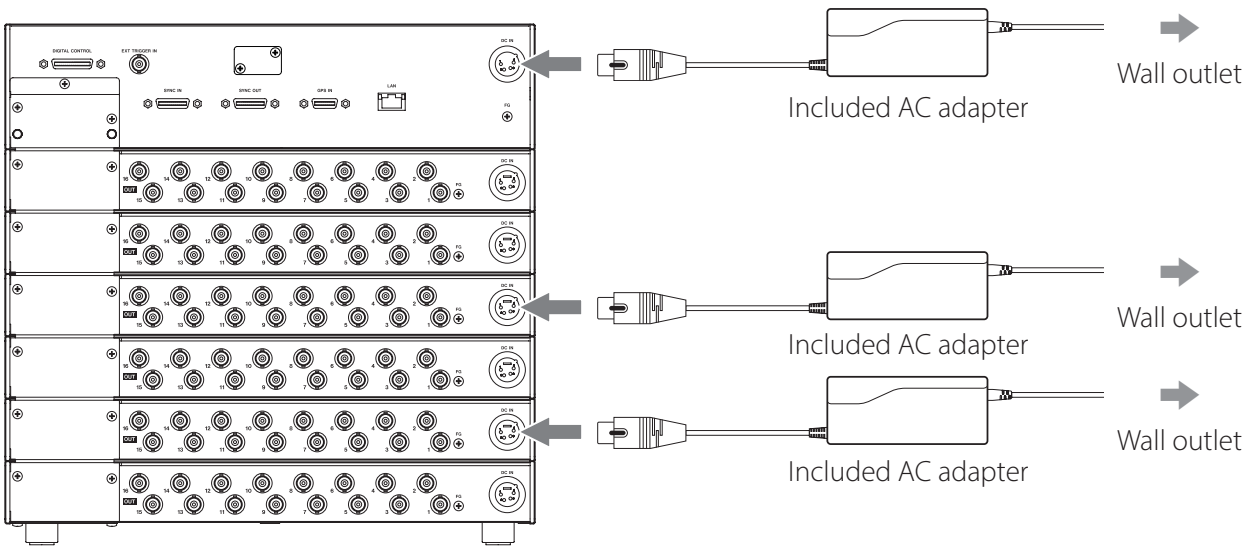


Connect one included AC adapter to the DC IN on the WX-9000 and the second included AC adapter to the DC IN on the third AU-WX9000EPIO unit from the top.

WX-9080



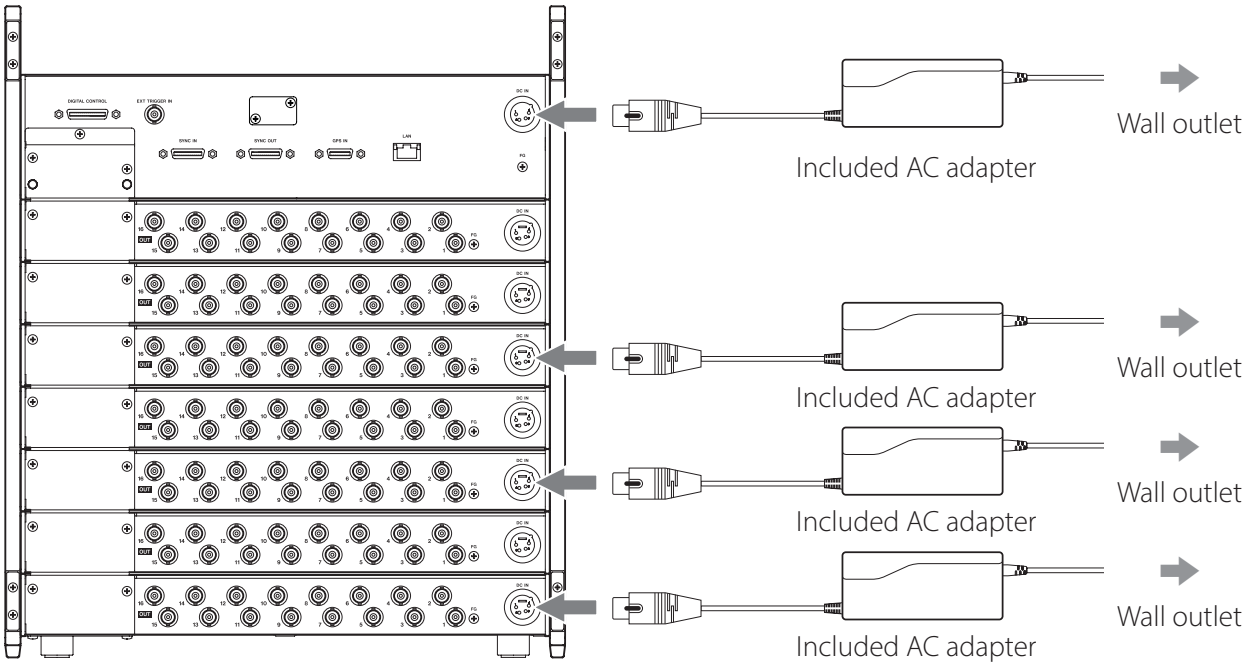
WX-9096



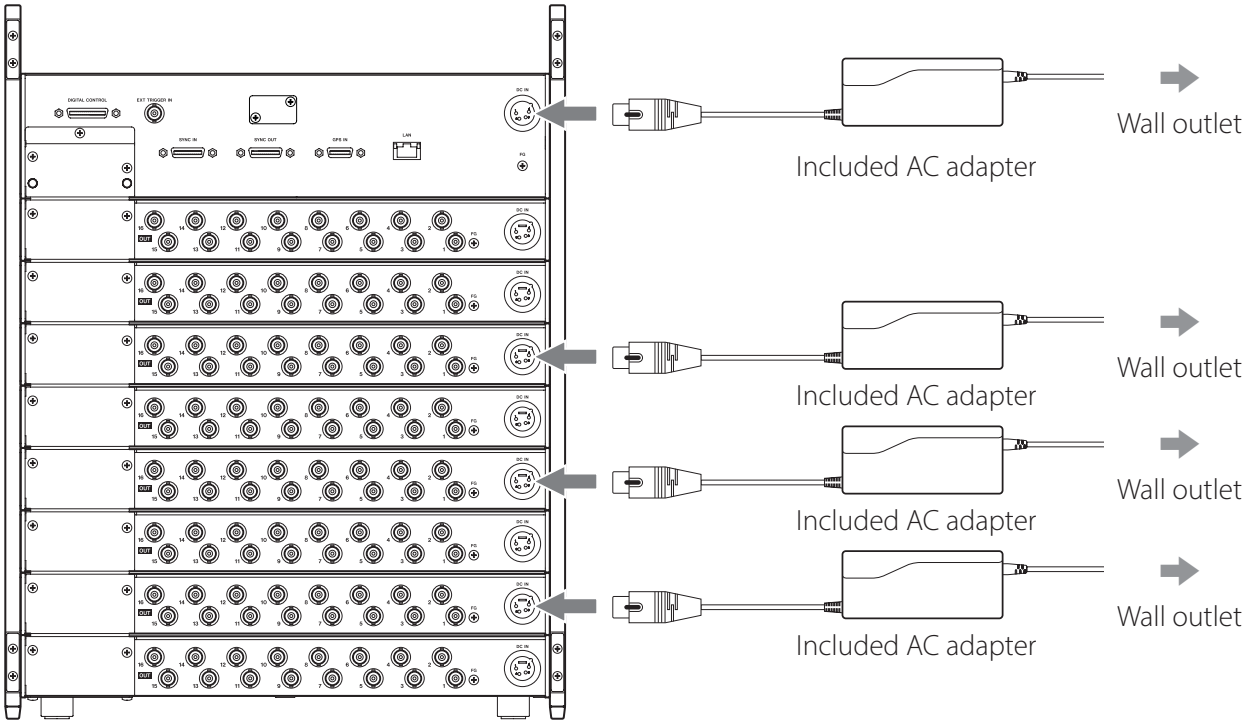
Connect one included AC adapter to the DC IN on the WX-9000, the second included AC adapter to the DC IN on the 3rd AU-WX9000EPIO unit from the top and the third adapter to the 5th unit.

3. Connections

WX-9112



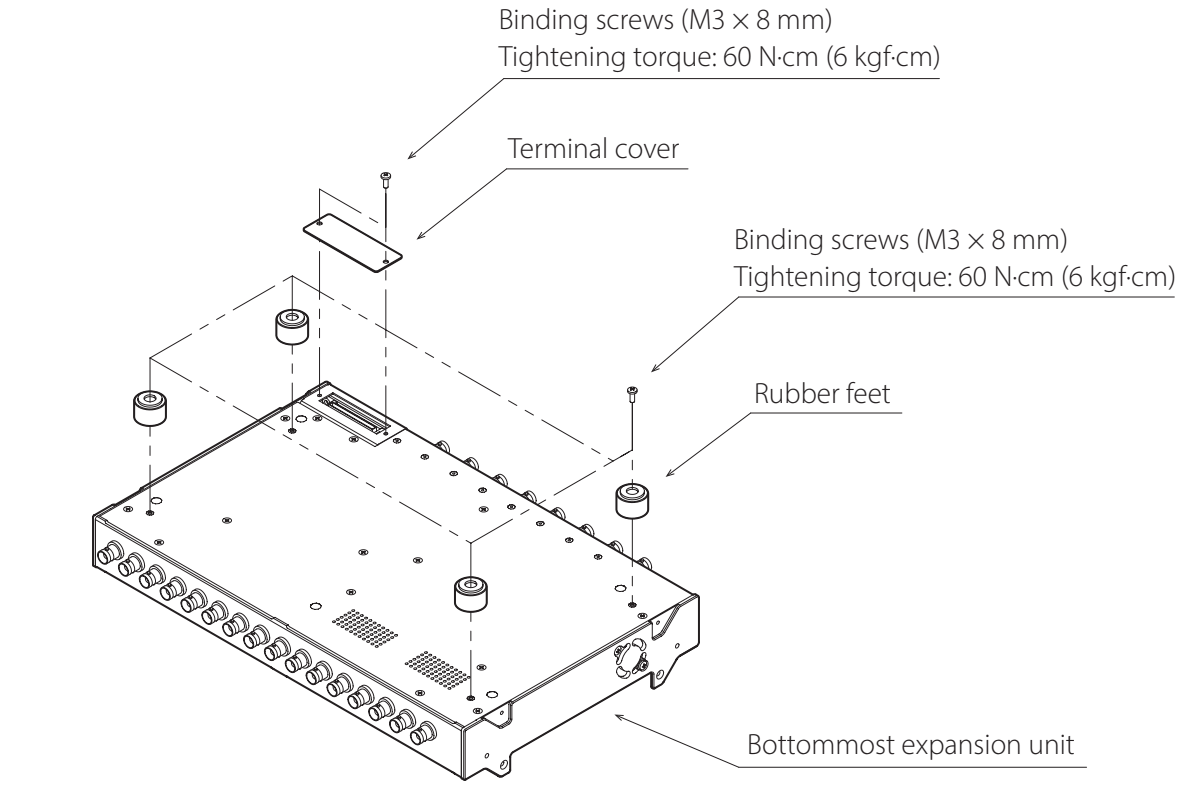
WX-9128

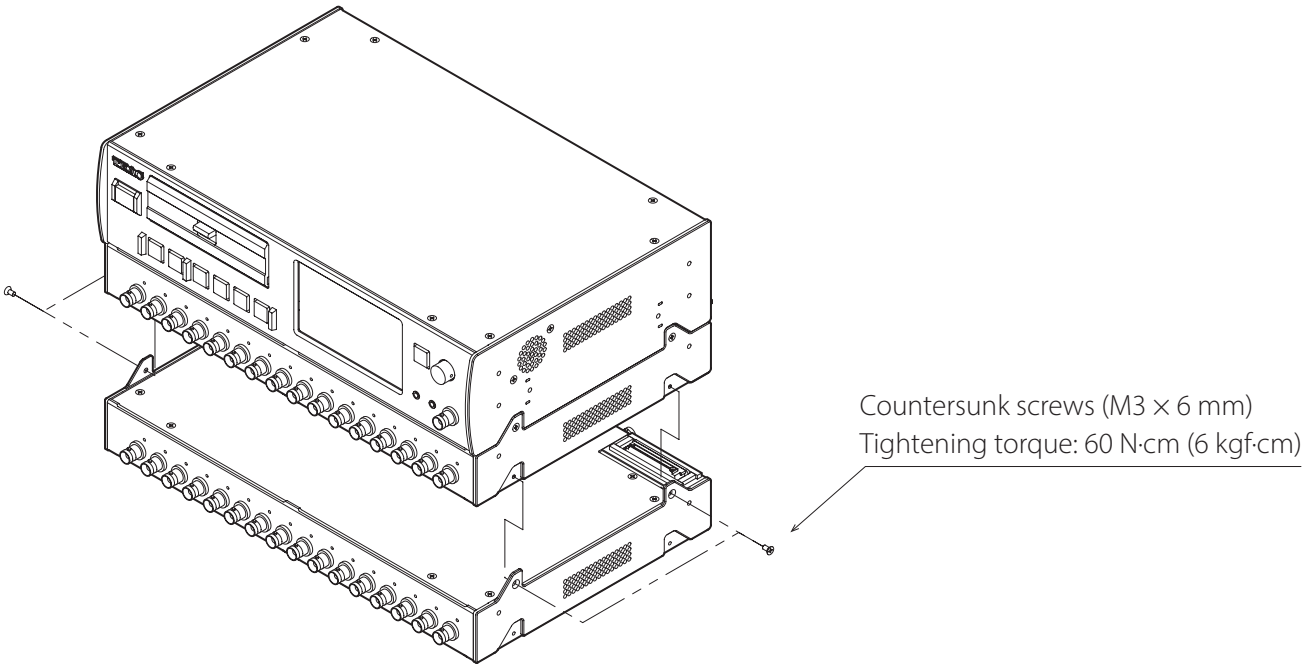


Connect one included AC adapter to the DC IN on the WX-9000, the second included AC adapter to the DC IN on the 3rd AU-WX9000EPIO unit from the top, the third adapter to the 5th unit and the fourth adapter to the 7th unit.

3-2. Expansion unit (AU-WX9000EPIO) installation procedures

Expansion units (AU-WX9000EPIO) can be installed by following the illustrations below.





ATTENTION

If the number of channels is 112 or more, attach optional side frames.

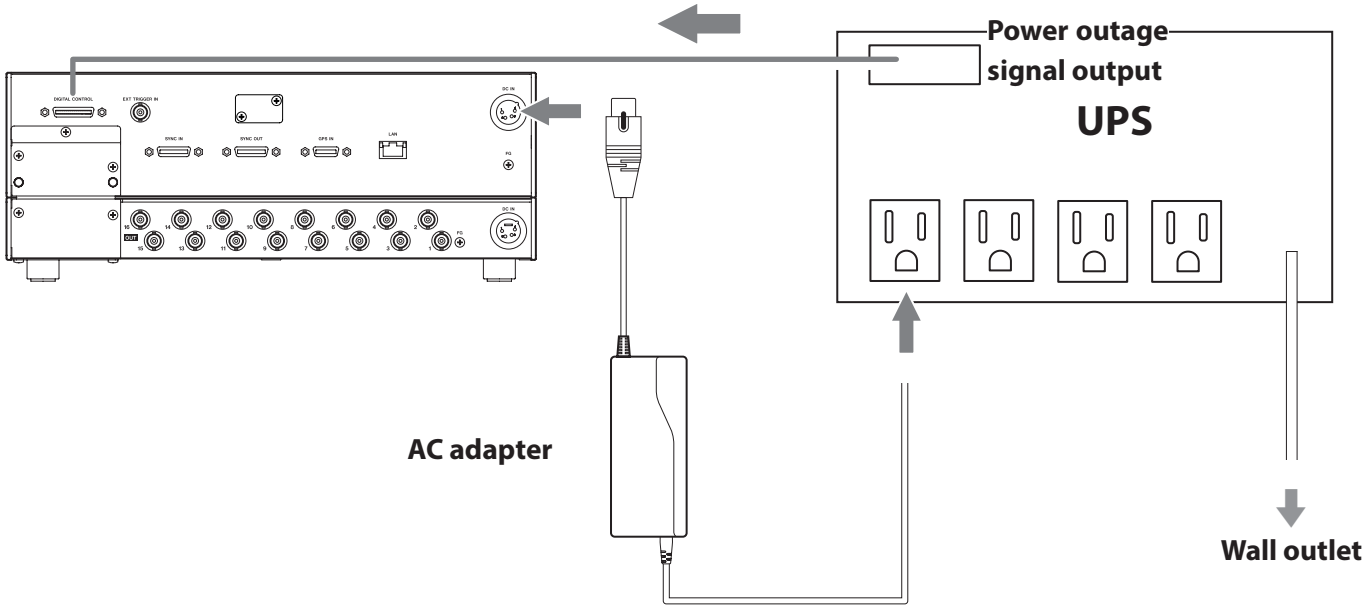
3-3. Supplying DC power to the WX-9000 system

The WX-9000 operates on DC 11–30V power.
To supply power using equipment other than the included AC adapter, correctly follow the pin number assignments in "5-5. DC IN" on page 29.
Equipment could be damaged if connections are made with incorrect pin numbers or voltage that exceeds the input voltage range is supplied.

⚠ ATTENTION

- The DC power input voltage range is DC 11–30 V. Never use a voltage outside this range. Doing so could damage equipment or cause unexpected system shutdowns.
- Do not supply power to DC INs until after securely connecting all connection cables between units.
- Before disconnecting connection cables, turn off the power to the DC INs.

3-4. Connecting an uninterruptible power supply (UPS)



Even if a power outage occurs while a WX-9000 is recording, data except for that recorded just before the outage will be retained in most cases.
This is because the system regularly conducts file closing procedures during recording, so even if a power outage occurs while recording data, all data from the start of recording until the last file closing procedure before the outage will have been saved.
However, since file management information is also recorded along with the measurement data to the recording media, regular file closing procedures alone cannot protect all data depending on the timing in some cases.
For complete protection against power outages, use an uninterruptible power supply (UPS) for the external power source.Have the UPS send a power outage signal to the WX-9000 so that it will conduct recording completion procedures.

Power the WX-9000 through its AC adapter from a power output from the UPS.

Connect the UPS power outage signal output to the DIGITAL CONTROL input/output connector on the WX-9000.
After confirming that the connection cables are securely connected between all units, turn on the power for the UPS and then the WX-9000.

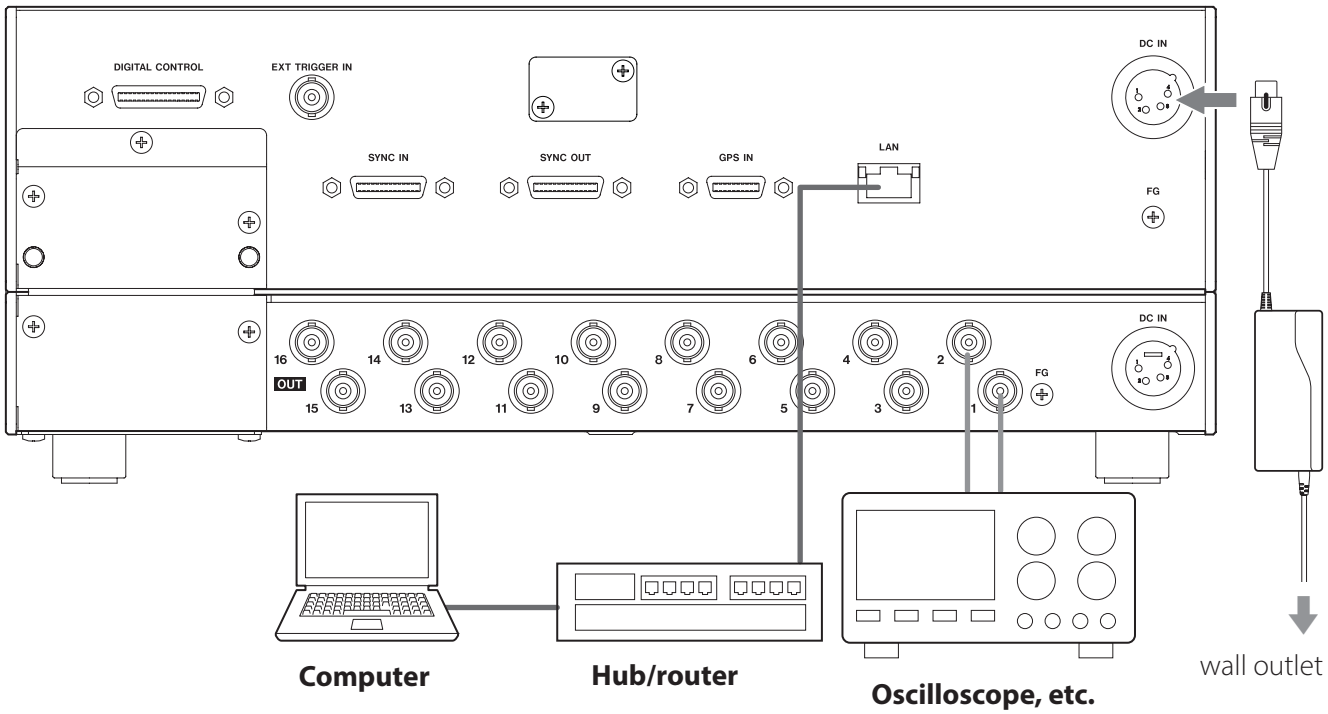
Continued on the next page ➡

For details about this unit's DIGITAL CONTROL input/output connector, see page 27.
For details about UPS power outage signal output, check with the manufacturer of the UPS as there are differences among models and manufacturers.
Enable the UPS function by setting this unit or using WX9K Navi.

Operation after power outage

When a power outage signal is detected, measurement will stop and the unit will switch to a stopped state.

3-5. Connecting with computers and oscilloscopes



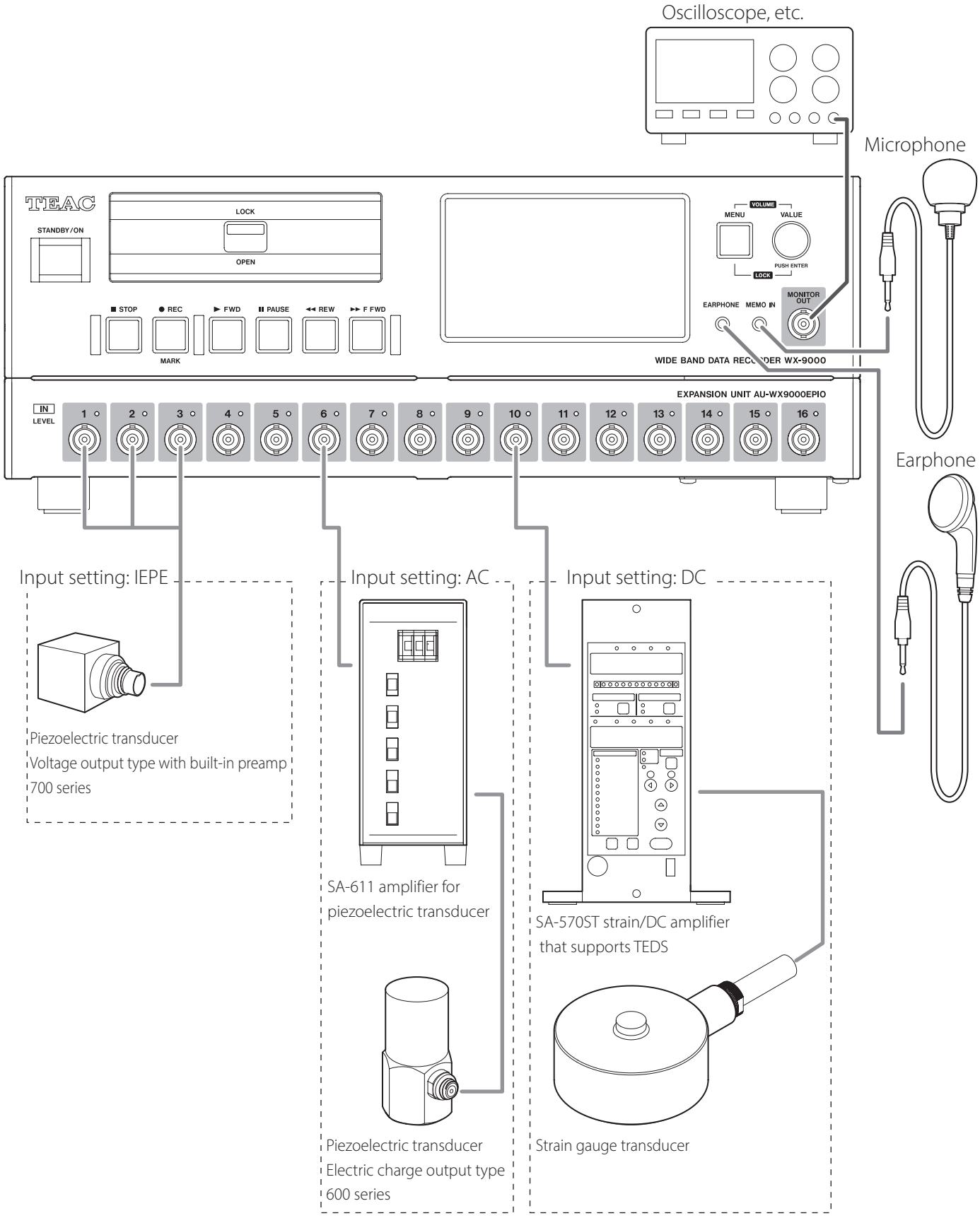
- This unit's LAN connection supports 1000BASE-T Ethernet.
  Use a compatible computer.
- This unit's LAN connection is compatible with Auto MDI/MDI-X. You can use a straight cable even when connecting with a computer directly. Use a category 7 LAN cable.

3-6. TEDS

A Transducer Electronic Data Sheet (TEDS) is a standard format defined in IEEE 1451.4 for recording information specific to a measurement sensor that is stored within the sensor itself. By connecting a TEDS sensor with a TEDS-compatible amplifier module, sensor calibration is made unnecessary, reducing the time required for measurement preparations.

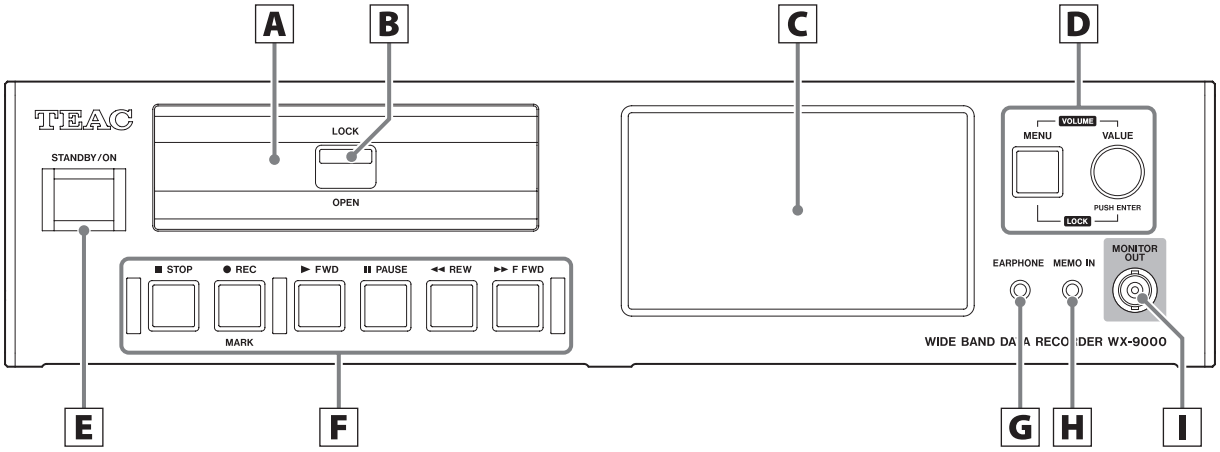
- If transducer information is not compliant with the TEDS IEEE standard, correct information cannot be loaded and displayed.
- Supports TEDS Ver. 1.0.

3-7. Sensor and oscilloscope connection example

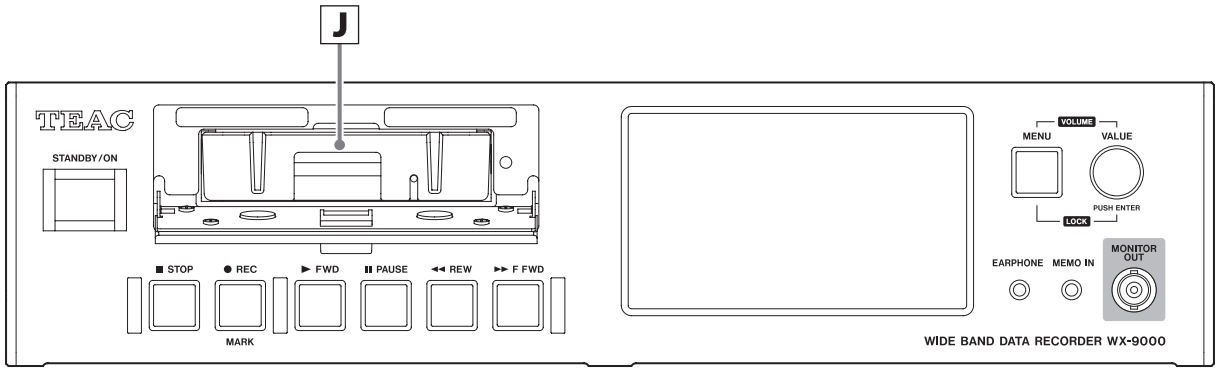


4-1. Front

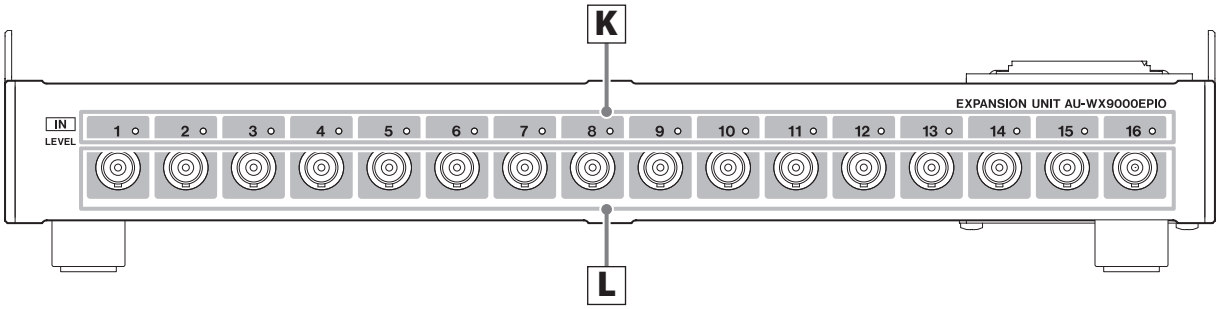
Recording unit (WX-9000)



● Drive cover open



Expansion unit (AU-WX9000EPIO)



A Drive cover

This is the drive unit cover.
A drive slot is under the cover.
Always keep the drive cover closed when not loading or unloading media. Moreover, keep it closed when data is being recorded or played back.

B Lock latch

The drive cover can be locked by sliding the latch up when the cover is closed.
To install media, lower the lock latch and then open the drive cover.

C Display (LCD)

This 4.3-inch TFT color touchscreen display with 480×272 resolution shows various types of information.

NOTE

The display is produced with extremely high-precision manufacturing technologies. At least 99.99% of the pixels operate as specified. On rare occasions, a pixel might misfire or appear as a red or black dot, but this is not a malfunction.

D Operation controls

MENU button

This opens the Menu Screen.

If the panel is locked on this unit, the button LED will light.

VALUE knob

When a cursor is visible, turn this to move it. When inputting parameters, turn this to increase and decrease values.

Press this to use it as an ENTER button.

- Panel lock (LOCK)
  While pressing the MENU button, press and hold the VALUE knob to lock and unlock the front panel.
- Volume adjustment (VOLUME)
  While pressing and holding the MENU button, turn the VALUE knob to adjust the speaker volume.

E STANDBY/ON button

Press this to turn the system on. Press this again to put the system into standby.

The light shows the status as follows.

Lit blue: Stopped

Blinking blue: Starting up

Lit orange: Power supply voltage abnormal

Blinking orange: Entering standby

Unlit: In standby mode

F Transport buttons

■ STOP button

Press this to stop recording and playback.

● REC button

Press this when the system is stopped to make it record ready.

- The ● REC button can be pressed when recording to set an event mark.

Play (► FWD) button

Press this when the system is stopped or playback ready to start playback.

Press this when the unit is record ready to start recording.

❚❚ PAUSE button

Press this when the system is stopped or playing back to make it playback ready.

Press this when recording to make it record ready.

Search (◄◄ REW/ ►► F FWD) buttons

Use these to search playback files.

- The highest ID that can be searched is 999.

◄◄ REW

Press this when playing a file to make it playback ready at the beginning of the same file.

Press this when playback ready to make it playback ready at the beginning of the previous file.

►► F FWD

Press this when playing back or playback ready to make it playback ready at the beginning of the next file.

The following button LEDs will light according to the status of this unit.

Status	Lit button LEDs
Stopped	■ STOP button
Record ready	● REC button
Recording	● REC button, Play (► FWD) button
Playback ready	Play (► FWD) button, ❚❚ PAUSE button
Playing	Play (► FWD) button

G EARPHONE jack

Connect the included earphone here.

- When an earphone is connected, sound will not be output from the speaker built into the side of the WX-9000.

H MEMO IN (mic input) jack

Connect the included microphone here to record voice memos.

I MONITOR OUT connector

This can be used to output a monitor signal, which can be the input signal of any channel.

- Analog output is not synchronized.

J Drive slot

Insert an SSD case or an SD adapter (optional) here.

K LEVEL LEDs

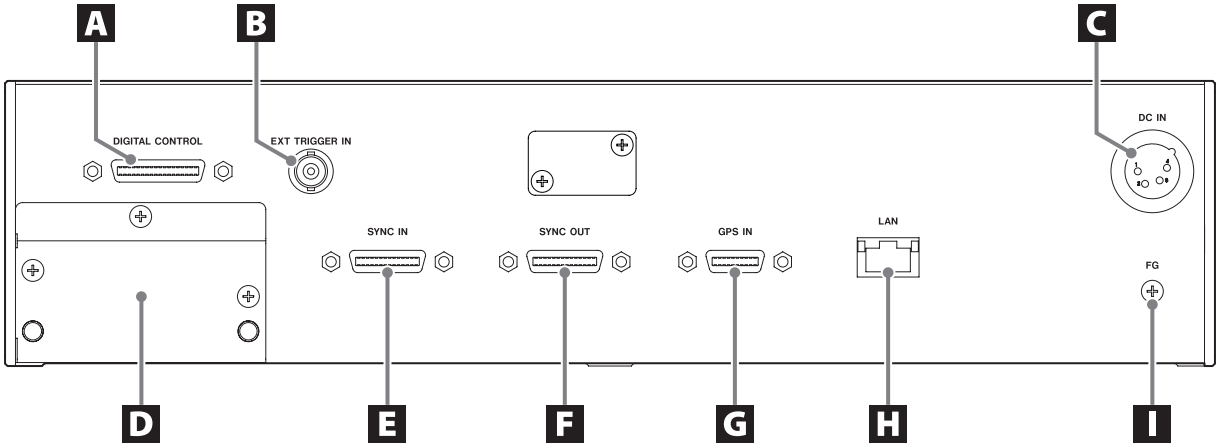
Each LED lights green when its input level exceeds 10% of its input range and lights red when it exceeds 115%. When using an IEPE sensor, the LED blinks yellow when there is no IEPE current.

L Input (IN) connectors

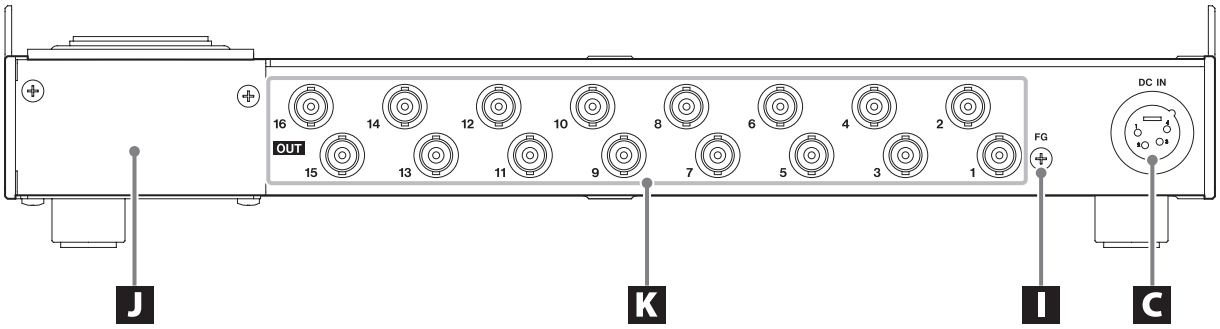
Use these to input measurement signals.

4-2. Back

Recording unit (WX-9000)



Expansion unit (AU-WX9000EPIO)



A DIGITAL CONTROL input/output connector for external control

Use this to control recording and playback with contact signals and to connect a remote control unit (option).

B EX TRIGGER IN connector

When using an external contact signal as a trigger to start and stop recording, input the trigger signal here.

C DC IN power connector

Connect the included AC adapter here.

Use the optional DC power cable designed for the WX-9000 to supply DC 11–30V power. This can power the recording unit (WX-9000) and up to two expansion units (AU-WX9000EPIO).

D Stack connection adapter

E SYNC IN connector for synchronized recording

Use this to synchronize recording. Do not connect anything when not conducting synchronized recording.

F SYNC OUT connector for synchronized recording

Use this to synchronize recording. Do not connect anything when not conducting synchronized recording.

G GPS IN connector

H LAN (1000BASE-T) connector

This is for an Ethernet connection. Use this to connect the system with a computer.

The left LED lights when linked.

The right LED blinks when transmitting data.

- Use a category 7 LAN cable.

I FG (frame grounding) terminal

Connect this to something suitable for grounding.

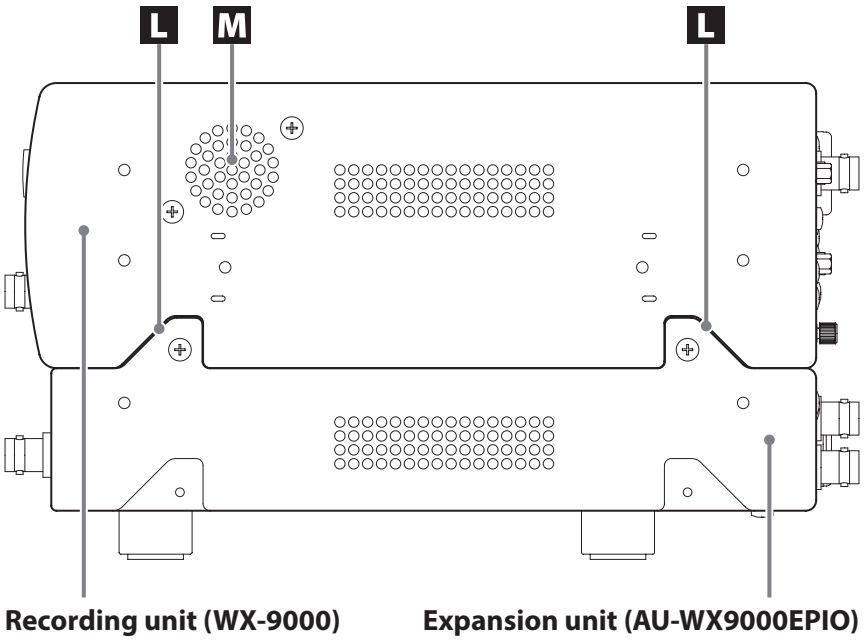
J Stack connection adapter

K Output (OUT) connectors

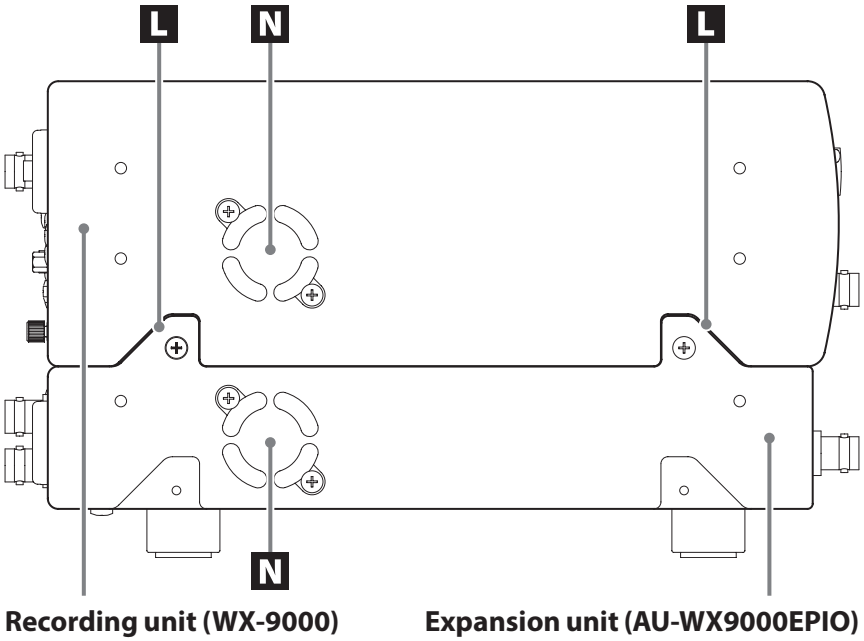
Use these to output measurement and playback signals.

4-3. Sides

Right side



Left side



L Joints

Mechanically connect the recording unit (WX-9000) to an expansion unit (AU-WX9000EPIO) and additional expansion units to each other in four places.

M Built-in speaker

This outputs voice memos.
When an earphone is connected to the earphone jack, no sound is output from this built-in speaker.

N Cooling fans

These are exhaust fans to cool the recording and expansion units. Do not block their outputs.

5-1. DIGITAL CONTROL input/ output

Function

Use this to control recording and playback with contact signals and to connect a remote control unit (option).

Contact input

STOP, REC, FWD, PAUSE, REW, F FWD, REC_FWD, MARK, panel lock, internal clock calibration, UPS

Status output

STOP, REC, FWD, PAUSE, REW, F FWD, REC_FWD, MARK, panel lock

Input and output circuit formats

Input format

L level: 0.4 V or less
H level: open or 2 V or more
Pulse width: 100 msec or more

Output format

Open drain, 8mA maximum sync current

Connector type

Angled, half-pitch, 36-pin (Hirose DX10A-36S)

Panel lock input signals

Panel lock input signals can be used to prevent use of the buttons on the front panel. The first signal locks the buttons, and the next signal unlocks them.

Pulse width
Lock: 100 msec or more
Unlock: 1 sec or more

Pin assignments

Pin	Function
1	Power
2	Power
3	STOP status
4	REC status
5	FWD status
6	PAUSE status
7	REW status
8	F FWD status
9	Ground
10	Ground
11	STOP input
12	REC input
13	FWD input
14	PAUSE input
15	REW input
16	F FWD input
17	Ground
18	Ground
19	Power
20	Power
21	REC_FWD status
22	MARK status
23	Panel lock status
24	Reserved
25	Reserved
26	Ground
27	Ground
28	REC_FWD input
29	MARK input
30	Panel lock input
31	Internal clock calibration input
32	UPS input
33	Reserved
34	Reserved
35	Ground
36	Reserved

ATTENTION

- Do not connect anything to the Reserved pins.
- Pins 1, 2, 19 and 20 are specifically for an optional remote control unit.
  Do not use them for any other purpose.

5-2. GPS IN

Function

Use this when connecting an optional GPS receiver.

Connector type

Angled, half-pitch, 20-pin (Hirose DX10A-20S)

Pin assignments

Pin	Function
1	Power
2	Power
3	GPS serial input
4	GPS serial output
5	Ground
6	Reserved
7	Reserved
8	Reserved
9	Ground
10	Reserved
11	Reserved
12	Reserved
13	Reserved
14	Ground
15	PPS input for GPS
16	Reserved
17	Reserved
18	Reserved
19	Reserved
20	Ground

ATTENTION

- Do not connect anything to the Reserved pins.
- Pins 1 and 2 are specifically for an optional GPS receiver. Do not use them for any other purpose.

5-3. EXT TRIGGER IN

Function

When using an external contact signal as a trigger to start and stop recording, input the trigger signal here.

Changing from H to L starts recording.
Changing from L to H stops recording.

External triggers must be turned on with the trigger setting.

Input format

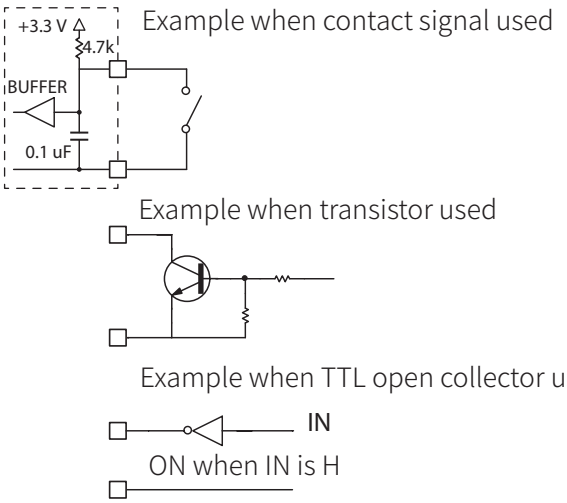
L level: 0.4 V or less
H level: open or 2 V or more

Connector type

BNC connector

Internal circuit

Recording starts when the external trigger signal input reaches the L level. Use contact and non-contact (transistor or TTL open collector) to achieve L level.
Do not apply voltage from an external source.



5-4. SYNC IN and SYNC OUT

Function

Use these input and output connectors for synchronized recording with two systems. Do not connect anything when not conducting synchronized recording.

Connector type

Angled, half-pitch, 28-pin (Hirose DX10A-28S)

5-5. DC IN

The DC IN power input connector can supply power to the recording unit (WX-9000) and two expansion units (AU-WX9000EPIO).

Function

Input a voltage between 11 V and 30 V.

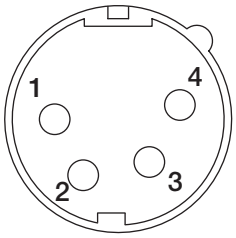
- The power input voltage range is DC 11–30 V.

Connector type

XLR (Neutrik NC4MPR-HD)

Pin assignments

Pin	Function
1	0V DC power supply
2	Reserved
3	Reserved
4	11V–30V DC power supply



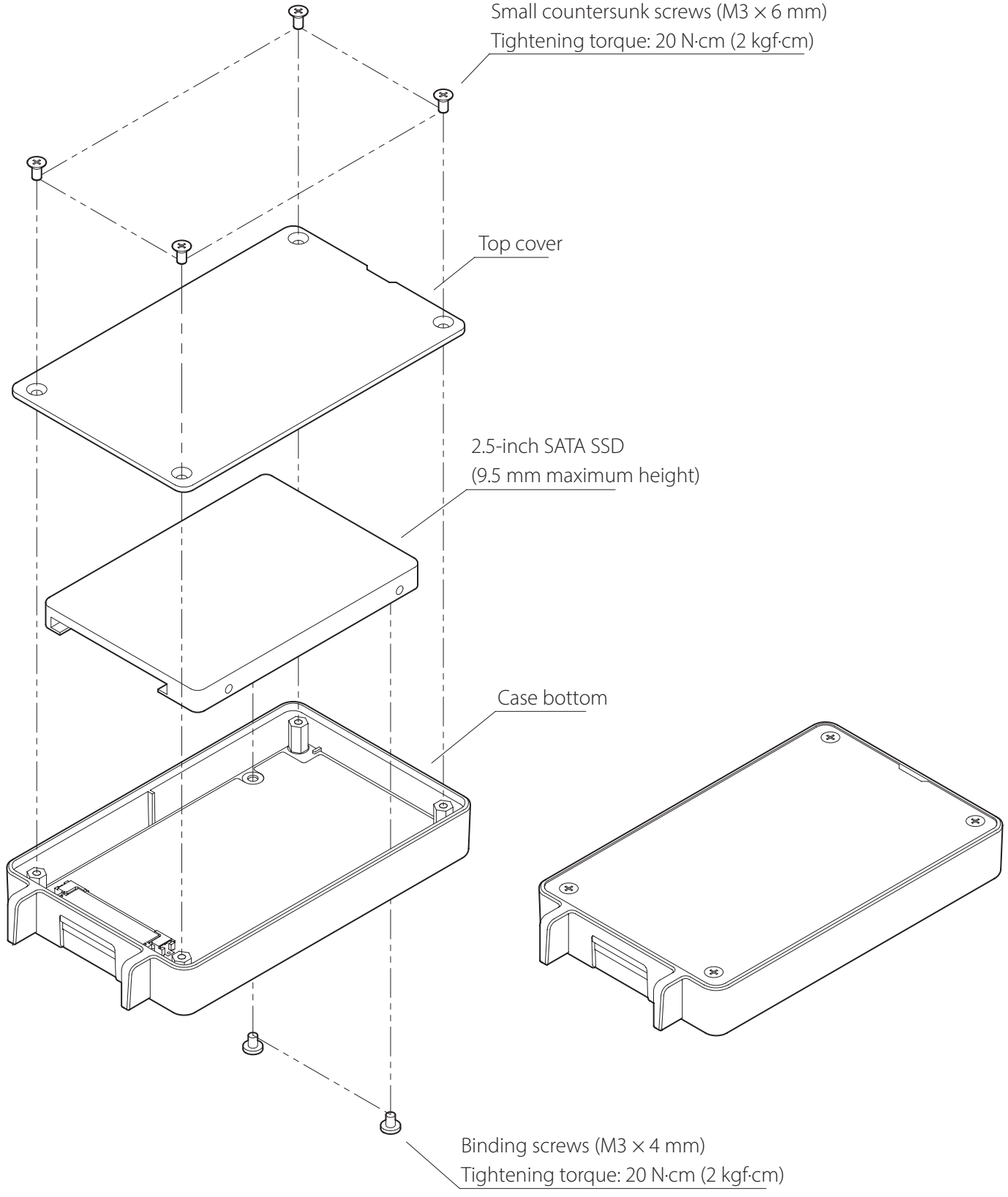
ATTENTION

Do not connect anything to the Reserved pins.

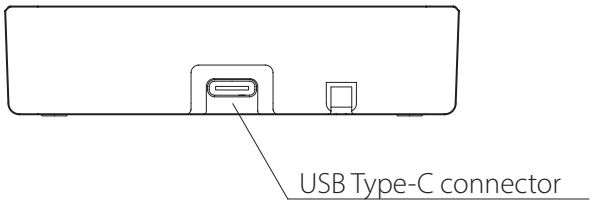
6. Basic operation

6-1. SSD cases

Install SSDs (sold separately) into SSD cases following the instructions in the illustration below.



6-1-1. Back of SSD cases



6-1-2. Handling

Avoid allowing an SD case to be dropped while being handled.
In order to assure the accuracy and security of data, please observe the following precautions.

- After purchase, format SSDs with the WX-9000 before using them with this system.
- Avoid dusty or humid environments.
- Avoid direct sunlight, high and extremely cold temperatures, as well as extreme temperature changes.
- Do not force an SSD case into the drive slot.
  If insertion is difficult, confirm that the SSD case orientation is correct.
- Remove the SSD case before transportation.

6-1-3. Insertion and removal

Open the drive cover to access the drive slot.
Never open the drive cover or remove an SSD case when the unit is in use (including when recording, playing back or writing data).
Doing so could cause recording to fail, recorded data to be lost and loud noises from the monitoring output, which could damage equipment.

Inserting SSD cases

With the nameplate label facing down, insert the end with the USB Type-C connector.

Removing SSD cases

Use the protrusion on the SSD case to pull it directly out.

ATTENTION

- After installing an SSD case, close the drive cover. The media will not be recognized if the drive cover is not closed.
- Use a USB Type-C to Type-C cable to connect with a computer.

6-2. Using SD cards

6-2-1. Handling SD cards

Avoid using SD cards with adapters for microSD cards and miniSD cards.

- Always remove the SD adapter before transportation.

6-2-2. Insertion and removal

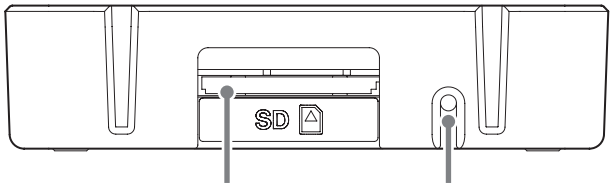
Inserting SD cards

Insert SD cards when the system is stopped.

1 Open the drive cover.

2 Insert the SD adapter (TZ-WX9KSDADP) in the drive slot.

3 Push the SD card all the way in.



- A clicking sound can be heard when the card is pushed all the way in.

4 Close the drive cover.

Removing SD cards

Never remove an SD card when the system is in use (including when recording, playing back or writing data).
Removing a card could cause recording to fail, recorded data to be lost and loud noises from the monitoring output, which could damage equipment.

1 Open the drive cover.

2 Push the SD card in gently.
The SD card will come out part way.

3 Pull the SD card out by hand.

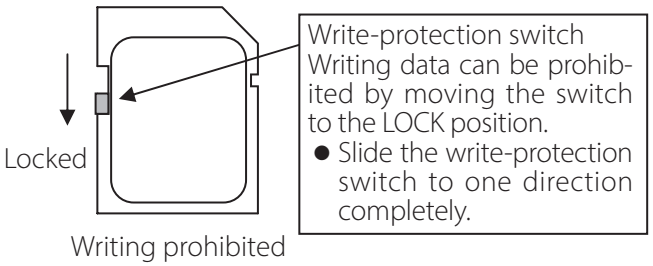
4 Close the drive cover.

ATTENTION

- After installing an SD card, close the drive cover. The media will not be recognized if the drive cover is not closed.
- Do not use the SD adapter connected to a computer.

SD card write-protection switches

SD cards have write-protection switches.



- To use an SD card for recording or to erase recording data on it or format it, unlock the write-protection.

6-3. Turning the power on

Check the connections between the recording unit (WX-9000) and the expansion units (AU-WX9000EPIO), as well as the AC adapter connections and press the STANDBY/ON button.
When the Home Screen appears on the display, the system is ready for use.

6-4. Putting the system into standby

After confirming that the recording media is not being accessed, press the STANDBY/ON button to put the system into standby.
When the system is in standby, the STANDBY/ON button will be unlit.

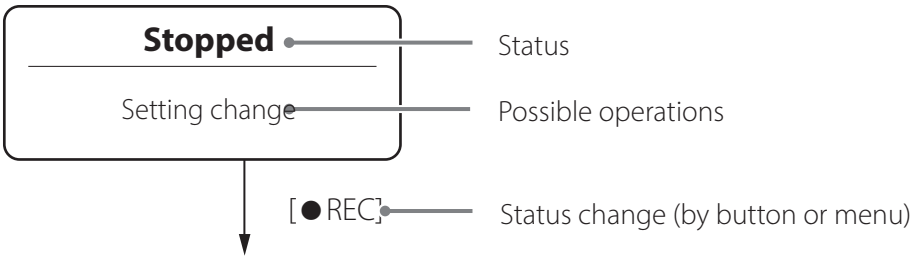
ATTENTION

- If the system is put into standby while data is being written to the recording media, data recorded on it might become unreadable.
- Before moving the system, stop power supply to the AC adapters and DC IN connectors.

6-5. Status changes

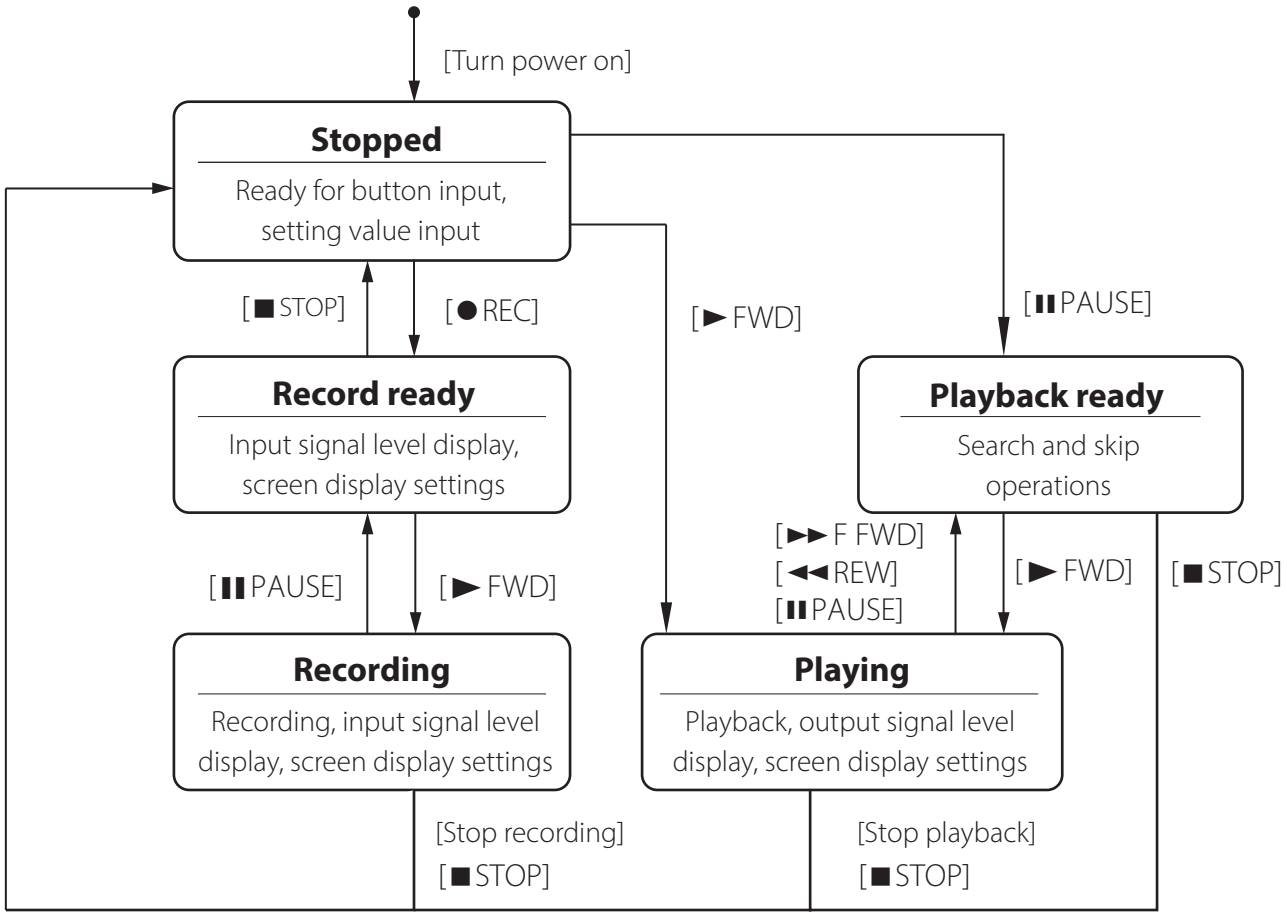
6-5-1. Explanation of status change diagram entry

Entries appear on the status change diagram in the following manner.

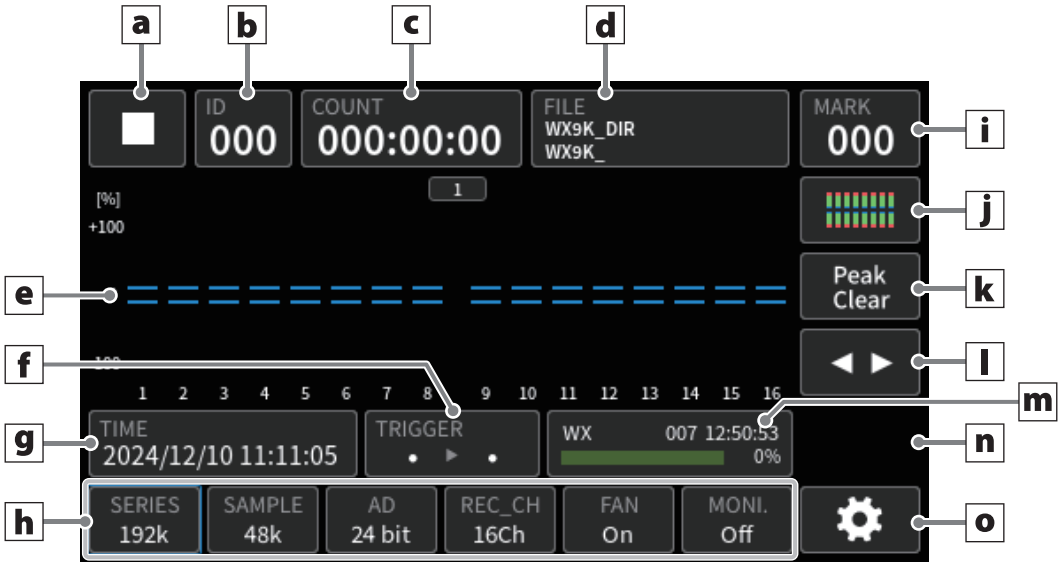


6-5-2. Status change diagram

The status of the system can be changed in the following manner.



6-6. Home Screen



a Recording unit status display area

This icon shows the current status of the recording unit.

The meanings of the icons are as follows.

- ■ Stopped (ready for use)
- ►II Playback ready
- ► Playing back
- ●II Record ready
- ● Recording

b ID number

This shows the ID number used in the current folder. ID numbers with up to 3 digits from 001 to 999 can be shown.

When ready for playback, you can select the ID item on the LCD. Press and turn the VALUE knob to search by ID.

- IDs are consecutive file numbers inside playback and recording folders. 999 is the highest number that can be shown.
- These do not always match the file name suffixes (3 digits).
- This shows the ID of the specified recording folder when stopped.
  This will not be shown when the recording destination is a computer.

c Counter (COUNT)

This shows the hour, minute and second (HHH:MM:SS). The information shown changes according to the status of the recording unit.

When recording

This shows the elapsed time since recording started.

- When pre-trigger is enabled, recording will start ahead by the amount of pre-trigger time.

When playing back or playback ready

This shows the elapsed time from the beginning of the file.

When ready for playback, you can select the COUNT item on the LCD. Press and turn the VALUE knob to search by event.

d Recording file information

The information shown changes according to the status of the recording unit.

When playing back or playback ready

This shows the folder and file names of the file that is being played or is ready for playback.

This will not be shown when the recording destination is a computer.

At all other times

This shows the name of the file that will be recorded.

Only the first 29 characters of file names can be set.

The last three numbers are automatically added when recording starts.

When the file name has been set, only these first 29 characters will be shown before recording starts.

e Data

This shows the bar meters, digital values and waveforms for the channel data.

f TRIGGER

The start and stop trigger settings are shown by icons (page 38).

g TIME

By default, this shows the year, month and day in that order (YYYY/MM/DD), but it can be set to show them in MM/DD/YYYY or DD/MM/YYYY format (YYYY: year, MM: month, DD: day).

The information shown changes according to the status of the recording unit.

When playing back or playback ready

This shows the time the recording was made.

At all other times

This shows the current setting of the WX-9000 system.

When ready for playback, you can select the TIME item on the LCD. Press and turn the VALUE knob to search by time.

- To set the time, select the TIME item on the LCD when stopped and press and turn the VALUE knob.

h Recording settings

These show recording setting values.

Select an item and press the VALUE knob to enable changing that setting value.

SERIES (sampling series)

Sampling frequency series

SAMPLE

Sampling frequency

AD (AD bit depth)

Recording quantization bit depth

REC CH

Number of recording channels

FAN

Cooling fans for the recording (WX-9000) and expansion units (AU-WX9000EPIO)

Setting this to Off will stop the fans for up to ten minutes.

- The fans cannot be stopped if the temperature of the units is high. Wait for the temperature to decrease.
- If the temperature becomes high, the fans will restart before ten minutes have passed.

MONI. (monitor)

This is the monitored channel.

The options are the channels available in the current system and Off.

Set this to Off when you do not want to output signals from the MONITOR OUT connector.

i MARK (event mark)

This shows the number of event marks.

The information shown changes according to the status of the recording unit.

When recording

this shows the total number of marked events from the beginning of the recording to the present.

When playing back or playback ready

this shows the total number of marked events from the beginning of the file to the current position.

When ready for playback, you can select the MARK item on the LCD. Press and turn the VALUE knob to search by MARK.

j Data display switch

This switches between display of parameters, digital values and waveforms.

k Display value switch

Bar meter display: Peak Clear

Digital value display: switch between instantaneous and RMS values

Waveform display: change time axis (50, 100 or 200 ms)

l Channel display switches

m Recording media information

This shows information about the recording media (page 38).

n Status display area

These indicators show the status of panel locking, synchronization, computer connection, voice memos and GPS.


Panel locked


Synchronizing (leader)


Synchronizing (follower)


Computer connected
The system cannot be operated when connected to a computer.


Voice memo on
(This appears green when there is voice memo input of a certain level.)


GPS satellite signal captured

o

This opens the Menu Screen.

- Setting values shown on the Home Screen can also be changed from the Home Screen. See "7. Changing settings from the Home Screen" on page 40.

6-7. Data display

6-7-1. Bar meter display

When recording, ready to record or playing back, bar meters show the input level of each channel as a % or dB.

% display

The bar meters are colored by level as follows.

Level (%)	Color
100 to 127	Red
10 to 100	Green
0 to 10	Blue
0 to –10	Blue
–10 to –100	Green
–100 to –127	Red

Unit name

This shows the number of the connected expansion unit.

dB display

The bar meters are colored by level as follows.

Level (dB)	Color
More than 0	Red
0 to –20	Green
Less than –20	Blue

Unit name

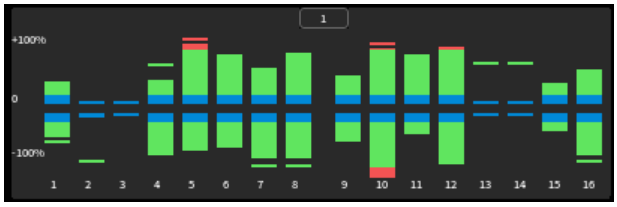
This shows the number of the connected expansion unit.

- To set whether to show % or dB, use MISC menu → Display data → Bar meter → Display format.

6-7-1-1. Setting the number of channels shown

In the MISC menu, the number of channels can be set to 16ch, 32ch or 64ch with the Display channels setting under Display data.

16-channel display example



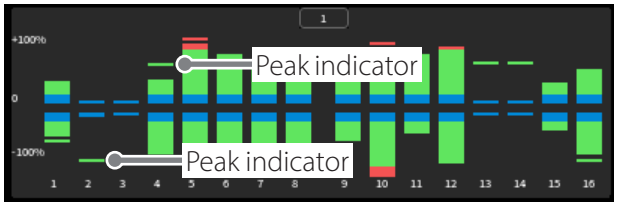
32-channel display example

64-channel display example

6-7-1-2. Peak indicators

Peak indicators begin to be shown when the system becomes record ready and when recording starts.

Display example



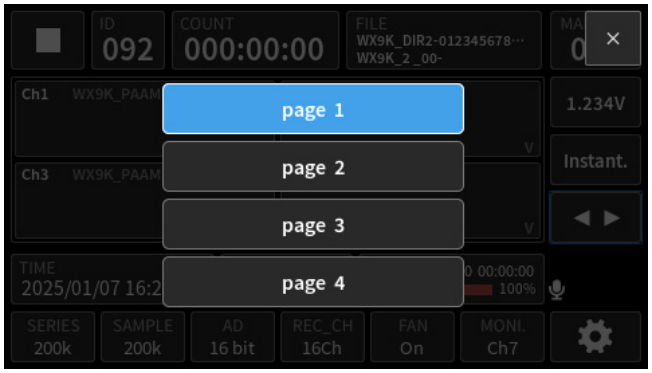
- Peak indicators are reset whenever recording starts from a record ready state.
- When recording stops, the bar meters disappear, but the peak indicators remain.
- Tap the display value switch (Peak Clear) button to clear peak indicators.

6-7-2. Digital value display

When recording, ready to record or playing back, digital values show the input levels of each channel.

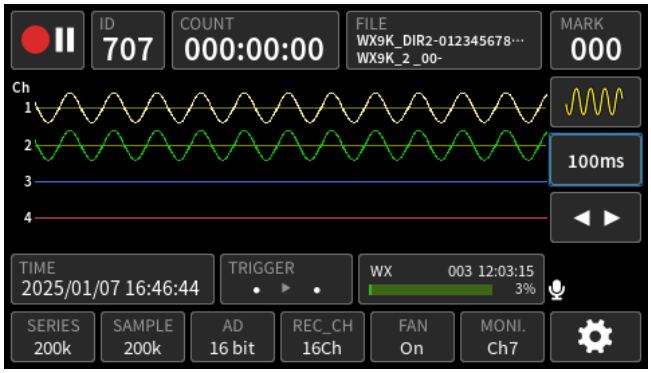
Tap the display value switch to change between instantaneous and RMS value display.
The channels shown can be changed by using the channel display switches.

- See "15-2-2. Digital value and Waveform" on page 70 to set which channels are shown on each page.



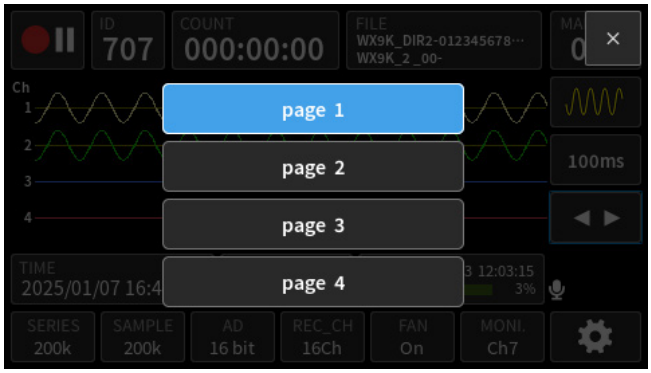
6-7-3. Waveform display

When recording, ready to record or playing back, waveforms show the input levels of each channel.

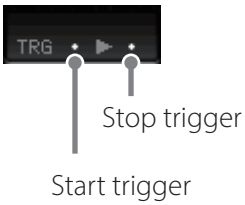


Use the display value switch to change the time axis.
The channels shown can be changed by using the channel display switches.

- See "15-2-2. Digital value and Waveform" on page 70 to set which channels are shown on each page.



6-8. Trigger indicators



The start and stop trigger settings are shown by icons.

- No trigger
- External trigger
- Level trigger
- Time
- Timeout

If the mode is set to trigger and multiple triggers are set, they are shown in the following order of priority.

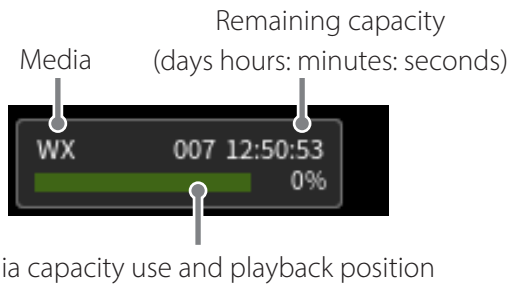
Start trigger

Priority	Trigger
1	Level trigger
2	External trigger
3	Timeout

Stop trigger

Priority	Trigger
1	Level trigger
2	External trigger
3	Time

6-9. Recording media information



Media capacity use and playback position display

The information shown changes according to the status of the recording unit.

When playing back or playback ready

The elapsed time from the beginning of the file is shown as a blue bar meter and as a %.

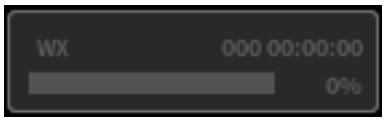
At all other times

The amount of the current media space used is shown as a green bar meter and as a %.

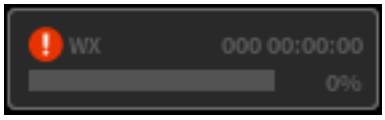
- If the recording destination is set to "WX" or "WX & PC", this shows the amount of space used on the WX media.
- The media use will not be shown when the recording destination is "PC".

Media and remaining space

This shows the type of recording media and amount of available recording time (days hours: minutes: seconds).



No media is loaded.



Something is wrong with the media or the media is not supported.

- Select the recording media information and press the VALUE knob to open the FILE screen.
- SSDs that are not in exFAT format (immediately after purchase, for example) cannot be used as is with this system. Format them with the WX-9000 before use.

6-10. Panel locking

While pressing the MENU button, press and hold the VALUE knob to lock and unlock the front panel.
When the panel is locked, the only operations that are possible are using the STANDBY/ON button and unlocking the panel (by pressing and holding the VALUE knob while pressing the MENU button).

Using any of the other buttons on the front panel will cause an alarm to sound.

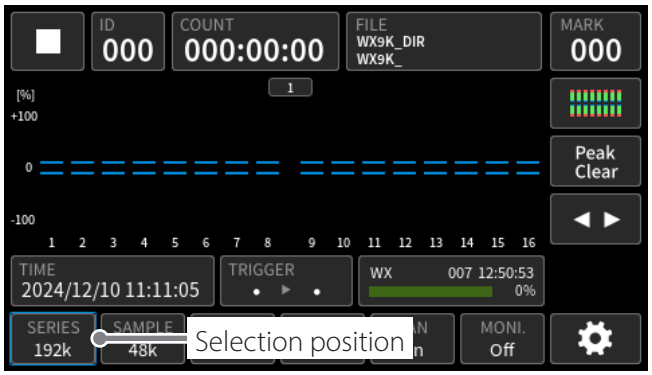
- When the panel is locked, the MENU button lights and the icon appears in the status display area on the Home Screen.

7. Changing settings from the Home Screen

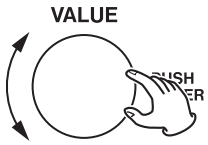
Settings can be changed on the Menu Screen. Settings that are used frequently can also be changed on the Home Screen.
See "11. Settings" on page 51 for details about each setting.

7-1. Screen operations

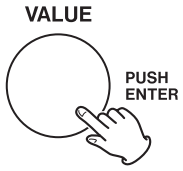
7-1-1. Using operation controls on the unit



1 Turn the VALUE knob to change the selected item.

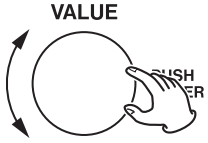


2 Press the VALUE knob.

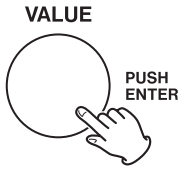


If you select an item that has its current value shown to its right on its menu screen, a list of values opens and you can change the selected item's setting.

3 Turn the VALUE knob to select the setting value.



4 Press the VALUE knob to confirm the setting.



7-1-2. Using the touchscreen

Areas outlined with gray rectangles are buttons.
These include execution buttons and selection buttons.

Execution buttons
These are shown as gray rectangles.
Tapping these on the Menu Screen will open the corresponding setting menus.

Selection buttons
These show selectable options and the selected value.

Options
These are shown as gray rectangles.
Tapping an option button will set the selection value.

Selected values
These are shown as rectangles with blue backgrounds.
These show selected items from among the options.

> ⚠ **ATTENTION!**
> Touch (tap) the screen gently using a finger. Do not touch the screen with hard or sharp objects. Doing so could break the screen.
> Do not touch the screen in multiple locations at the same time. It might not be able to recognize the touches correctly.

7-1-3. Items that can be set from the Home Screen

On the Home Screen, the following items can either be set or their settings screens can be opened.
See "12. SYSTEM menu" on page 58 for details about settings.

Sampling series (SERIES)
Sampling frequency (SAMPLE)
Analog-digital conversion bit depth (AD)
Number of recording channels (REC CH)
FAN
Monitored channel (MONI.)
Search by ID (when playback ready)
Search by MARK (when playback ready)
Search by COUNT (when playback ready)
Search by TIME (when playback ready)
Trigger settings (TRIGGER)
Recording media information
Recording folder name (FILE)
Recording file name (FILE)

8-1. Order of procedures

Set recording conditions
↓
Set recording destination
↓
Calibration
↓
Set triggers
↓
Start recording
↓
Stop recording

8-2. Setting recording conditions

Make settings for the sampling series, sampling frequency, AD bit depth, number of recording channels, voice memo, and input and output amps in the SYSTEM menu (page 58).

8-3. Setting recording destination

Set the device, folder and file to use for recording.
FILE menu → Recording file settings
Recording device
Recording folder
Recording file
Comment

- If the recording destination media does not have open space, format it.
  FILE menu → Format media

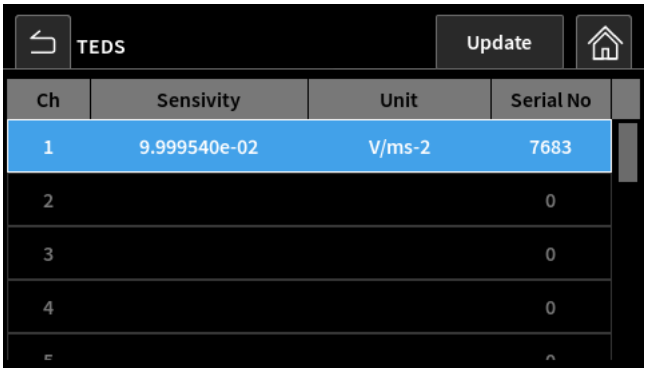
8-4. Calibration

Set the value used to convert sensor output to physical quantities.

8-4-1. Equivalent input calibration

In the Physical quantity conversion field, set the rated output and rated capacity indicated in the sensor test report (page 59).

8-4-2. TEDS calibration



When sensors that support TEDS are connected and "Update" is tapped, a list of TEDS data for those sensors is shown.

- When TEDS data is loaded, it will be set automatically as the calibration value.

8-5. Setting triggers

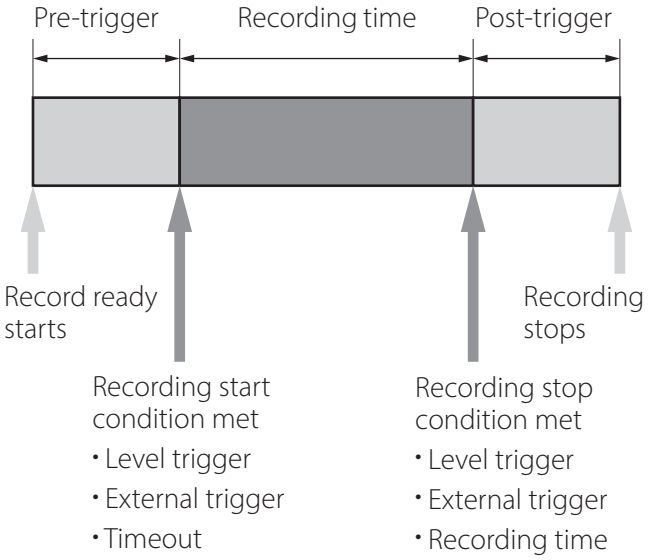
In addition to manually starting and stopping recording, you can also set the system to start and stop recording using triggers and intervals.

ATTENTION

- When using triggers and intervals to start recording automatically, put the system into a record ready state. The system will not detect triggers if just in a stopped state.
- If the fans have been stopped when recording, wait at least ten minutes before stopping the fans to record again. In particular, when using interval recording to record repeatedly, make sure the interval time is sufficient.

8-5-1. Trigger recording

Example of one trigger recording repetition



For trigger recording, you can set a combination of recording starting conditions (level trigger, external trigger or timeout) and recording stopping conditions (level trigger, external trigger or recording time).

Recording starting conditions

Level trigger

Use a level change for the set channel as a trigger.

External trigger

Recording starts when the input through the external trigger signal input (TRIG IN) connector becomes the L level (0.4 V or less).

Timeout

If the conditions set to start recording are not met within a specified time, recording will be forced to start automatically.

Pre-trigger

By default, the system saves data from the time between when a recording starting condition occurs and when a recording stopping condition occurs. When a pre-trigger interval is set, data is recorded before a recording starting condition occurs, but only after the system is made record ready.

- Voice memos are not recorded during this time.

Recording stopping conditions

Level trigger

Use a level change for the set channel as a trigger.

External trigger

Recording stops when the input through the external trigger signal input (TRIG IN) connector becomes the H level (open or 2 V or more).

Recording time

Recording continues only for the set amount of time. Recording will not stop if 0 is specified.

Post-trigger

Even after recording stop conditions are met, recording will continue for the set amount of time.

- When recording is stopped manually, however, post-trigger recording will not occur.

Number of repetitions

Set the number of repetitions. If the number of repetitions is 2 or more, the system will become record ready after recording stops the first time. When the recording starting condition is realized, recording will start again. This will repeat for the number of repetitions. Then, recording will stop.

If "Endless" is set to On, recording and pausing (becoming "record ready") will repeat until one of the following conditions is met.

- The recording capacity of the recording media becomes full
- The file name suffix exceeds the number of digits (3 for WX and 3–5 for PC)
- Recording is stopped manually

When set to 0, if recording is repeated until the recording media becomes full, the recorded data for the last recording might not be as long as the recording time setting.

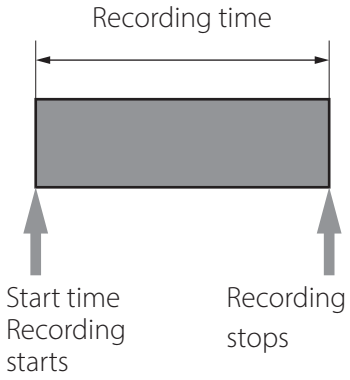
ATTENTION

Triggers cannot be monitored for about two seconds after becoming record ready, or after recording starting or stopping conditions occur.

During this time, nothing will happen even if trigger conditions occur.

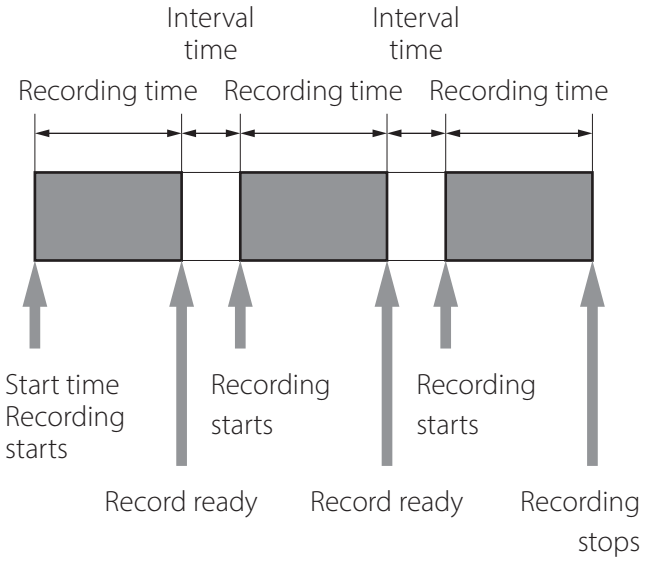
8-5-2. Interval recording

Example of one interval recording repetition



With interval recording, when the number of repetitions is set to 1, recording will start at the set time and stop after the set recording time has elapsed.

Example of three interval recording repetitions



When the Number of repetitions is set to 2 or more, recording will start at the Start time and become record ready after the set Recording time has elapsed. After the Interval time has elapsed, recording will start again, repeating for the set number of repetitions. Then, recording will stop.

If the Number of repetitions is set to "Endless", interval recording will repeat until one of the following conditions is met. Then, recording will stop.

- The maximum recording capacity of the recording media is reached
- The file name suffix exceeds the number of digits (3 for WX and 3–5 for PC)
- Recording is stopped manually

Start time

Recording starts at the set time.

ATTENTION

If the set time has already passed when the system is made record ready, recording will not start.

The system might take some time to become record ready if, for example, there are already many recorded files. Considering this, set the start time with sufficient spare time.

Recording time

Recording continues for the set amount of time.

Recording will not stop if 0 is specified.

Interval time

If the number of repetitions is set to 2 or more recordings, this is the amount of time that the system stays in a record ready state from the time one recording ends until the next recording starts.

ATTENTION

- Set the Interval time to at least six seconds.
- Even if the system has manually been put in a record ready state during the recording time, the next recording will start after the originally set recording time and interval time have elapsed.

Number of repetitions

Set the number of repetitions.

If "Endless" is set to On, recording and pausing (becoming "record ready") will repeat until one of the following conditions is met.

- The recording capacity of the recording media becomes full
- The file name suffix exceeds the number of digits (3 for WX and 3–5 for PC)
- Recording is stopped manually
- When set to 0, if recording is repeated until the recording media becomes full, the recorded data for the last recording might not be as long as the recording time setting.

8-5-3. Scheduled recording

Recording can be scheduled for a set date and time or at a specific interval.

8-6. Starting recording

Press the ● REC button to make the system record ready.
If a start trigger has been set, recording will start when a trigger condition is met.
If no start trigger has been set, press the ► FWD button to start recording.

Event mark
The ● REC button can be pressed when recording to set an event mark.

- A maximum of 200 event marks can be added to a single data file.

8-7. Stopping recording

If a stop trigger has been set, recording will stop when a trigger condition is met.
If no stop trigger has been set, press the ■ STOP button to stop recording.

8-8. Deleting recorded files

Immediately after recording, the recorded file can be deleted from the WX-9000 recording media.

- Deleting the file will no longer be possible after recording if the system is made record ready or the WX-9000 recording media is replaced.

9-1. Order of procedures

Set playback conditions
↓
Select playback files
↓
Start playback
If you want to search for a playback position, first press the ❚❚ PAUSE button to make the system playback ready and then search.

9-2. Setting playback conditions

Make output unit settings.
SYSTEM menu → Output amplifier settings

9-3. Selecting playback files

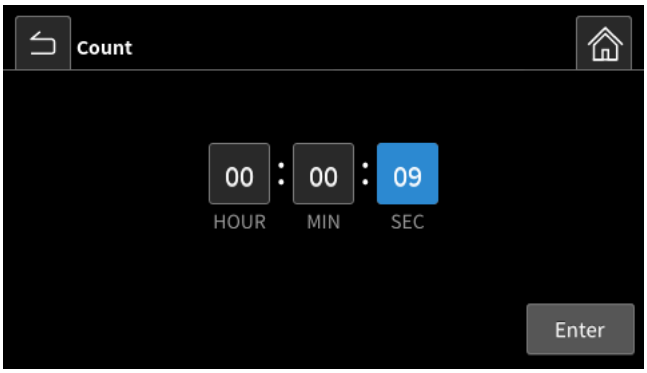
Select a file.
FILE menu → Playback file settings

ATTENTION

Recorded files in excess of 999 cannot be played.
Use WX9K Navi to play such files.

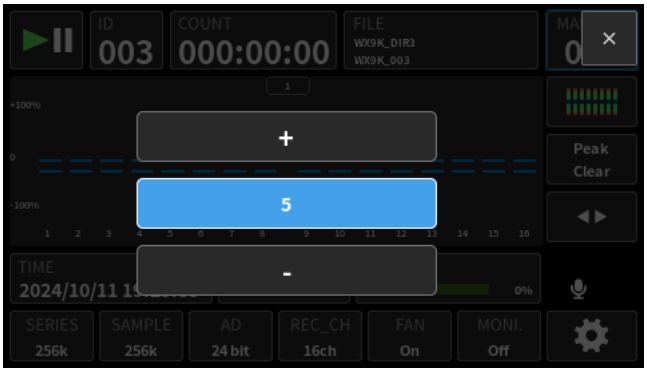
9-4. Searching by COUNT

When ready for playback, select the counter (COUNT) and use the VALUE knob to set the desired playback time. Then, press the VALUE knob to start playback from that COUNT position.



9-5. Searching by MARK

When ready for playback, select the mark number (MARK) and use the VALUE knob to search by MARK number. Then, press the VALUE knob to start playback from the position of that MARK number.

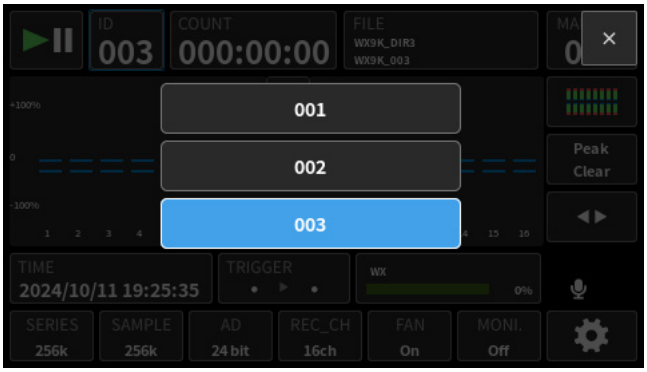


9-6. Searching by ID

When ready for playback, select the ID number, and use the VALUE knob to search for the desired ID number. Then, press the VALUE knob to start playback from the position of that ID number.

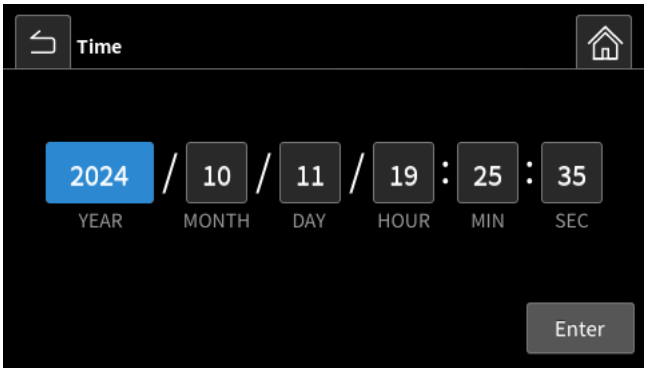
ATTENTION

The highest ID that can be searched is 999.



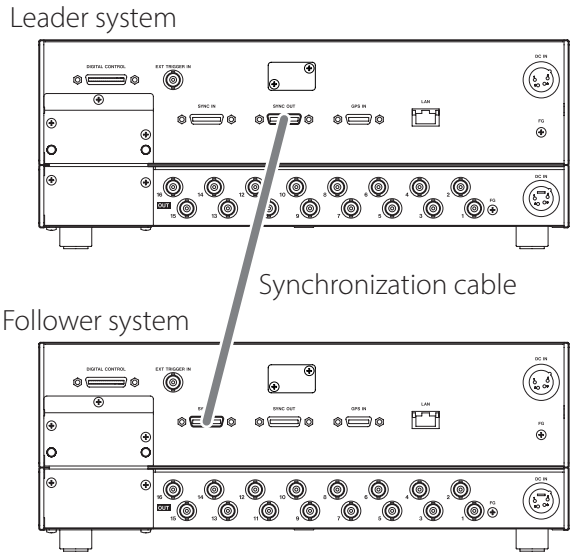
9-7. Searching by time

When ready for playback, select the date and time (TIME), and search for the desired date and time. Then, press the VALUE knob to start playback from the position of that date and time.



- After selecting the date and time (TIME), press the VALUE knob to make the date and time display larger.

10-1. Connections



- Use a synchronization cable to connect the leader system SYNC OUT connector to the follower system SYNC IN connector.
- When not using synchronized operation, do not connect the synchronization cable.
- Always turn the leader system and follower system off before connecting or disconnecting a synchronization cable.
- Leader/follower relationships will be set automatically according to the synchronization cable connections.

10-2. Turning the systems on

Turn the follower system on before the leader system. Leader systems will automatically check connections when they start up.
Connection checks will result in errors if the leader system is turned on before the follower system. If this occurs, conduct connection checks manually.

- The times of the leader and follower systems are not synchronized automatically. Use the "Sync settings" screen for the leader system to adjust the time.

10-3. Synchronized recording settings

If you set "Sampling frequency", "AD bit depth" and "Recording device" (recording destination) for the leader system, they will also be set for the follower system automatically. These settings cannot be changed on the follower system.

The number of recording channels can be set separately for the leader and follower systems. If recording is conducted at a transmission speed greater than that at which the follower system can record, a Synchro Error will occur.
Confirm that the number of recording channels on the follower system is suitable before starting recording.

- Setting triggers on the follower systems is not possible.
- Level triggers become effective ten seconds after the system becomes record ready.
- If recording cannot be continued with a leader system because, for example, it does not have enough recording media capacity, recording will stop at that moment.
  If recording cannot be continued with a follower system because, for example, it does not have enough recording media capacity, recording will stop only for that system. The other system will continue recording, but pausing will stop recording.

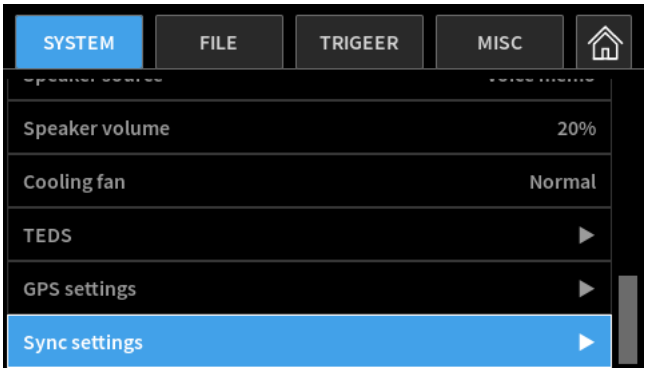
10-4. Synchronized playback settings

After selecting files to play on the follower systems, select the file to play on the leader system.
If you select the file to play on the leader system first, search by ID for the files to play on the follower systems.

- If the file to play is selected on the leader system without selecting files to play on the follower systems, the last recorded/played files will be played.
- Searching by ID is the only search method that can be used from a follower system. Use the leader system for other search methods.
- Search (◄◄ REW/ ►► F FWD) button operations of leader and follower systems are not linked. Use leader and follower systems individually for operations.

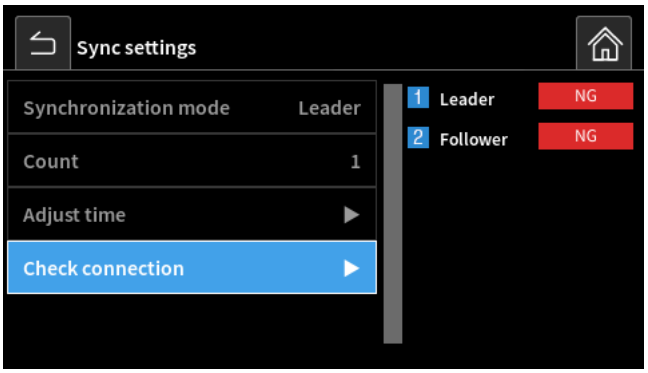
10-5. Checking synchronization connections

In the SYSTEM menu for the leader, select "Sync settings" and press the VALUE knob to open the Sync settings" screen.

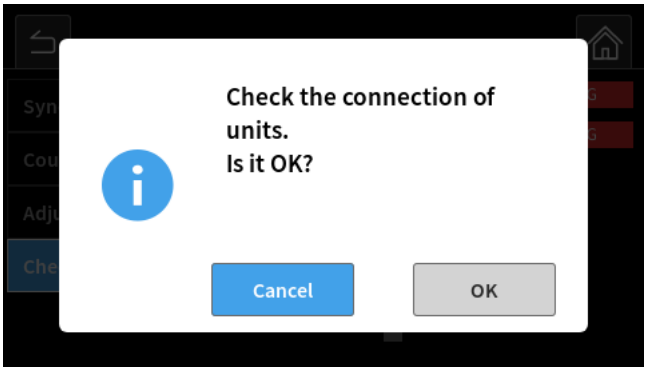


10-6. Checking connections

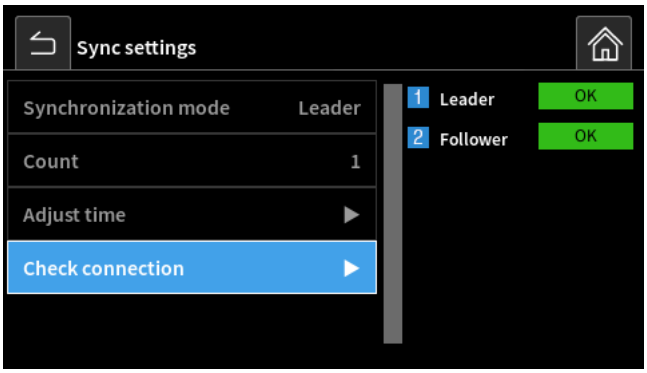
Confirm that leader and follower systems are connected correctly. Select "Check connection" on the leader and press the VALUE knob.



Select OK in the dialog and press the VALUE knob.

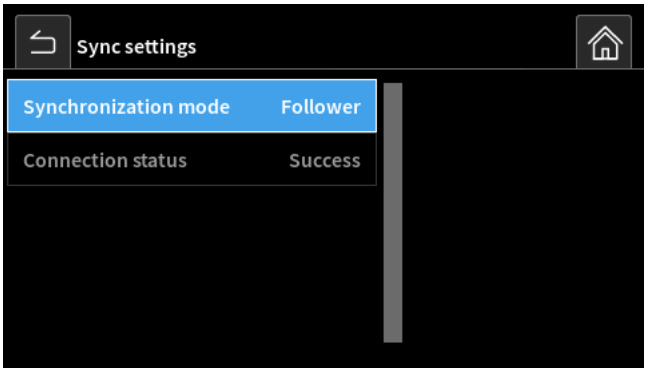


When they are confirmed to be connected properly, the leader and follower connection status will become "OK".



- Followers do not have this setting item.

When a connection check on a leader completes properly, the follower connection status will be "Success".



10-7. Adjusting time

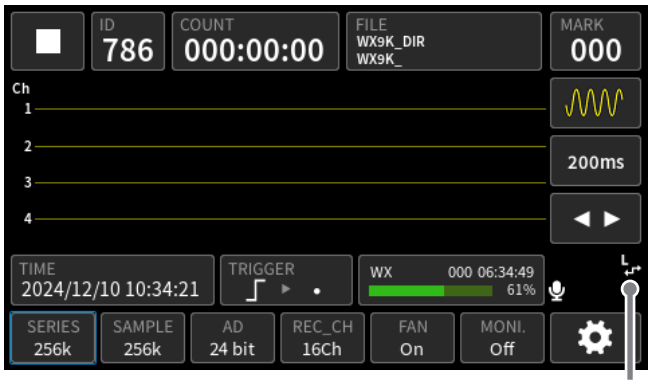
This sets the time of the follower system to the time used by the leader system. (The measurement error is ±1 second.)

Select "Adjust time" on the "Sync settings" screen of the leader and press the VALUE knob.

This sets the time of the follower to the time used by the leader.

10-8. Synchronization status display

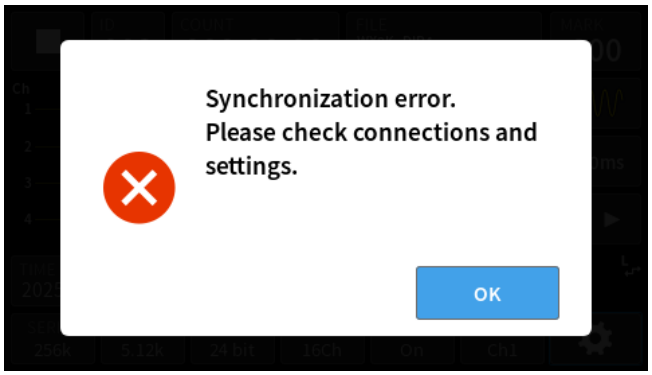
During synchronized connection, the synchronization status appears on the Home Screen.



Synchronized operation status

Sync status	Leader system	Follower system
Synchronizing	L	F

When starting synchronized recording or playback, errors will be shown if not synchronized.



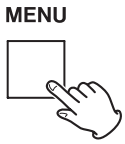
Settings can be changed on the Menu Screen. Settings that are used frequently can also be changed on the Home Screen.

11-1. Basic operation

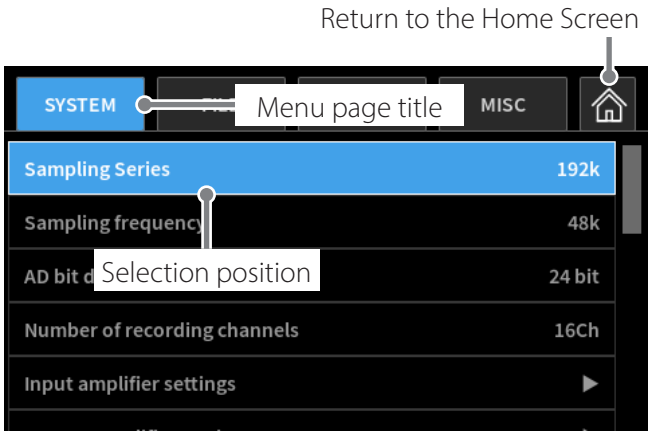
11-1-1. Using operation controls on the unit

Follow these procedures to change settings using the Menu Screen.

1 Press the MENU button on the front panel to open the Menu Screen.



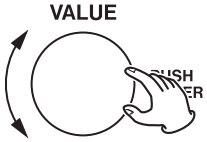
Items included in the menu page shown in blue are shown beneath the title.



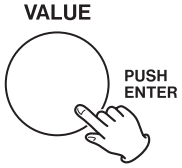
Press the MENU button again to cycle through the menu pages in the following order.

SYSTEM → FILE → TRIGGER → MISC → Home Screen

2 Turn the VALUE knob to change the selected item.



3 Press the VALUE knob.

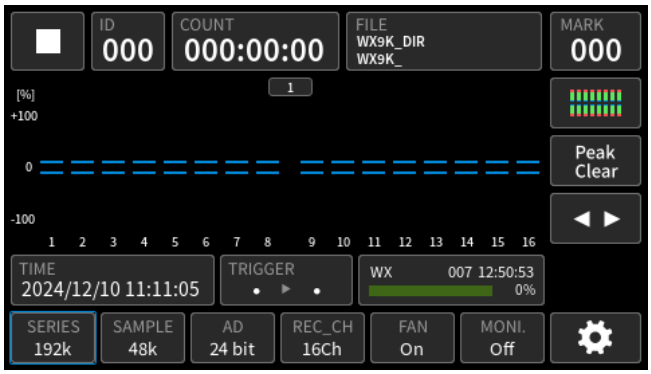


If you select an item that has its current value shown to its right on its menu screen, a list of values opens and you can change the selected item's setting.
The following screen shows an example of a selection from the setting value options. See "11-2. Selecting values from setting options" on page 53 for operation procedures.

- See "11-3. Inputting characters as setting values" on page 55 for how to input characters for setting values.
- When special operations are required for a setting, they are explained in the section for that setting.

When a menu item with an ▶ to its right is selected, a submenu will open. See "11-5. Opening submenu screens" on page 56.

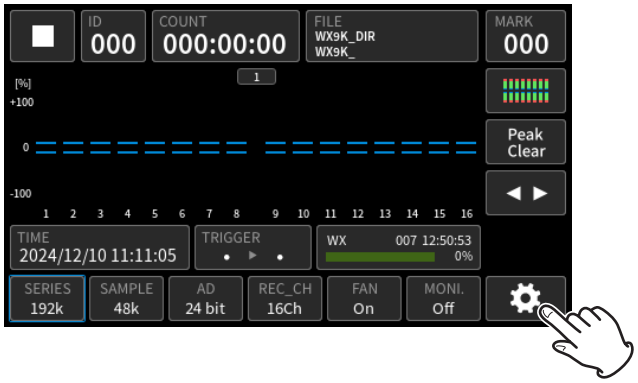
4 To return to the Home Screen when done changing settings, press the MENU button multiple times, or select the home icon at the top right of the screen and press the VALUE knob.



- When a submenu screen is open, press the MENU button to return to the Menu Screen above it.

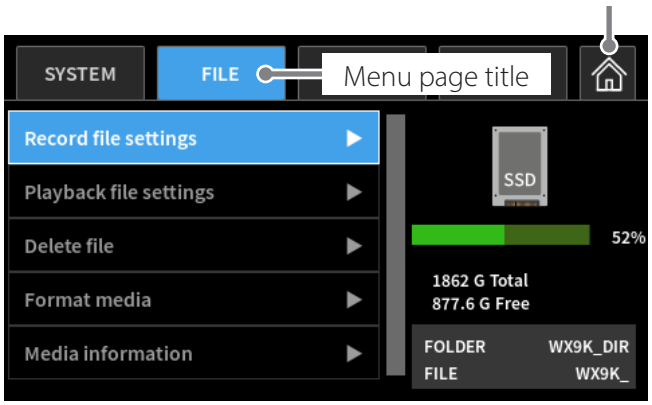
11-1-2. Using the touchscreen

1 Tap the ⚙ at the bottom right of the screen to open the Menu Screen.

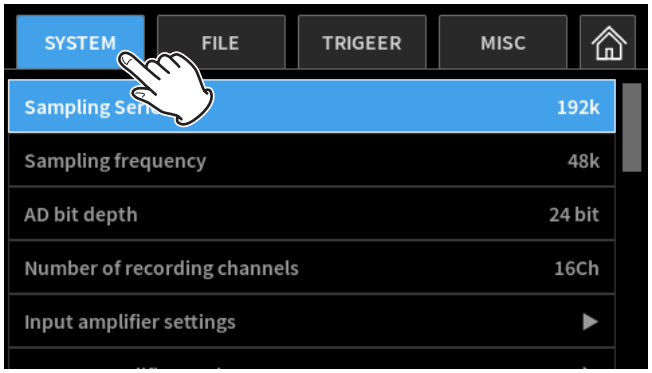


Items included in the menu page shown in blue are shown beneath the title.

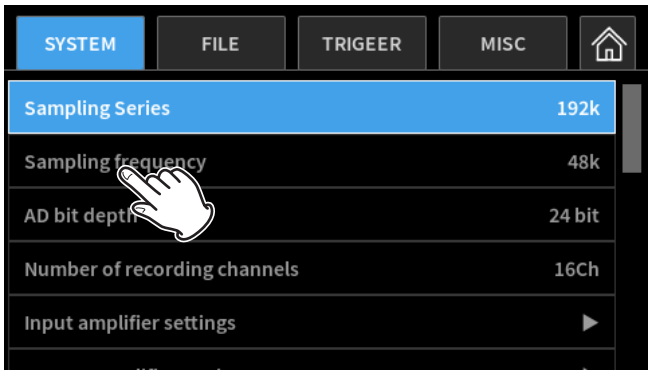
Returning to the Home Screen



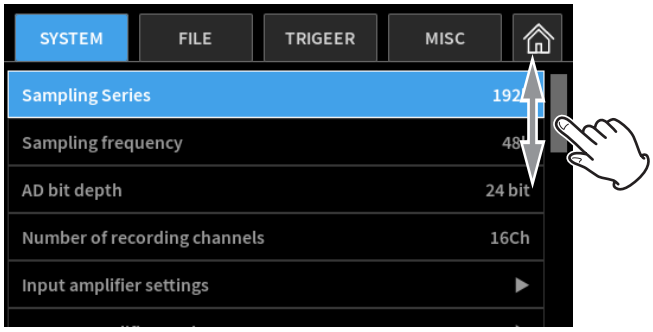
2 Tap the menu title for the settings to be made.



3 Tap the item to set.



Move the scroll bar on the right side of the screen up and down to scroll the setting items.

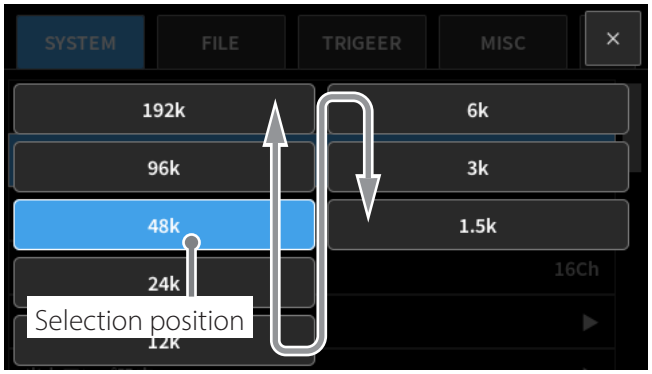


11-2. Selecting values from setting options

11-2-1. When there are 10 options or less

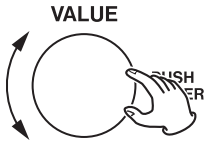
11-2-1-1. Using operation controls on the unit

A value for a setting such as the sampling frequency can be selected by pressing the VALUE knob to open a list of options.

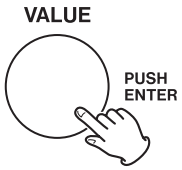


1 Turn the VALUE knob to select the value you want to set.

Turn it clockwise to move down the list.
Turn it counterclockwise to move up the list.



2 Press the VALUE knob to confirm the set value and close the list of options.

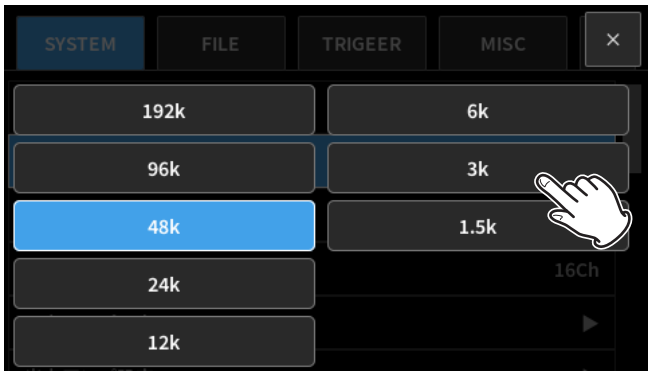


This will return to the Settings Screen.

- To cancel changing a setting, press the MENU button or tap the × at the top right or anywhere on the screen that is not an option button.

11-2-1-2. Using the touchscreen

Tap the value to set.



This changes the setting value and returns to the previous screen.

- To cancel changing a setting, press the MENU button or tap the × at the top right or anywhere on the screen that is not an option button.

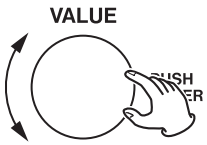
11-2-2. When there are more than 10 options

11-2-2-1. Using operation controls on the unit

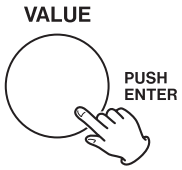
To select a setting when there are numerous options such as for an output amplifier setting, press the VALUE knob to show the current setting value.

1 Turn the VALUE knob to select the desired value.

Turn it clockwise to increase the value.
Turn it counterclockwise to decrease the value.



2 Press the VALUE knob to confirm the set value and close the list of options.

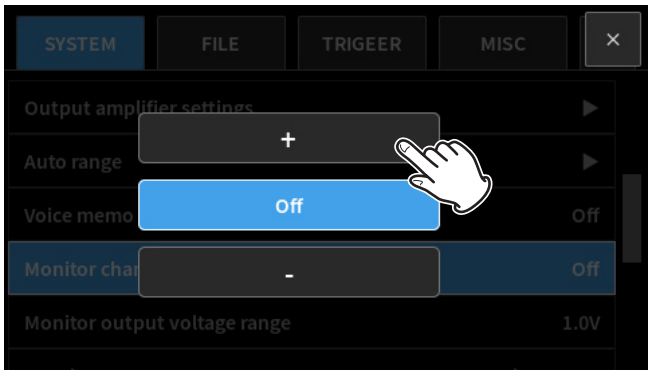


This will return to the Settings Screen.

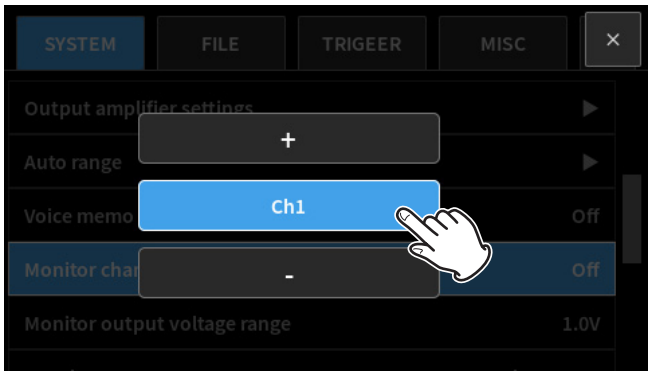
- Press the MENU button to cancel changing a setting.

11-2-3. Using the touchscreen

1 Tap + or – to set the value.



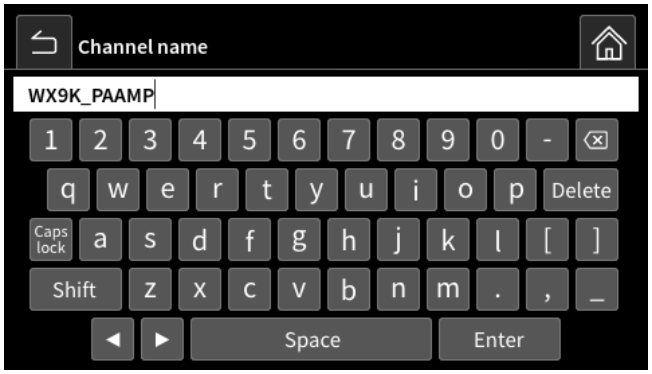
2 Tap the item in the center to confirm the setting value.



- Tap the ✕ at the top right of the screen to cancel changing a setting.

11-3. Inputting characters as setting values

To input characters as the value for a setting such as "Channel name", press the VALUE knob to open the character input screen.
The currently set characters are shown near the top of this screen.



NOTE

Use the touchscreen to input characters.
The VALUE knob cannot be used for input.

1 Tap the character for input.

2 Input the necessary characters and tap "Enter".

Return to previous screen

- To cancel changing a setting, tap the ⮌ button at the top left or the ⌂ button at top right of the screen.

11-4. Inputting numbers as setting values

To input numbers as the value for a setting such as "IP address", press the VALUE knob to open the number input screen.
The currently set numbers are shown near the top of this screen.

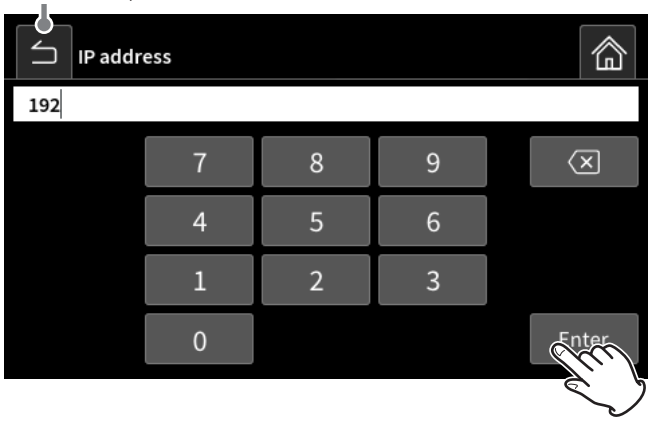
NOTE

Use the touchscreen to input numbers.
The VALUE knob cannot be used for input.

1 Tap the number for input.

2 Input the necessary numbers and tap "Enter".

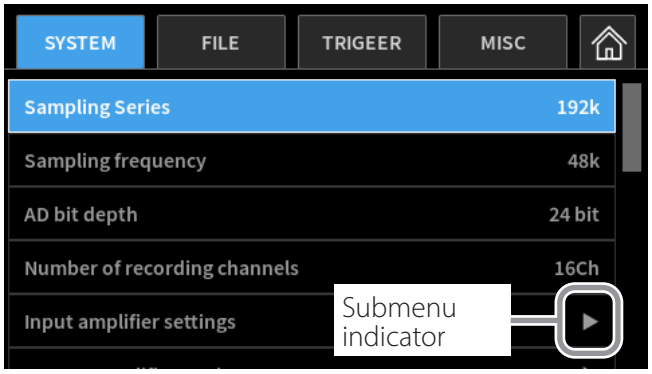
Return to previous screen



- To cancel changing a setting, tap the ⮌ button at the top left or the ⌂ button at top right of the screen.

11-5. Opening submenu screens

The menu screen has a multilevel structure.
The structure of the menus is shown in "11-6. Setting menu item list" on page 56.

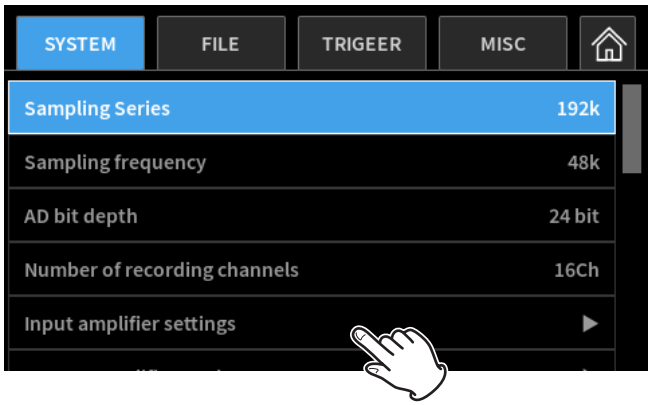


11-5-1. Using operation controls on the unit

Select a menu item with an arrow (▶) to its right and press the VALUE knob to open its submenu screen.

11-5-2. Using the touchscreen

When a setting item with an ▶ to its right is tapped, a submenu screen will open.



11-6. Setting menu item list

Menu structure

- HOME
  - Sampling series (SERIES)
  - Sampling frequency (SAMPLE)
  - Analog-digital conversion bit depth (AD)
  - Number of recording channels (REC CH)
  - Fans (FAN)
  - Monitored channel (MONI.)
  - Search by ID (when playback ready)
  - Search by MARK (when playback ready)
  - Search by COUNT (when playback ready)
  - Search by TIME (when playback ready)
  - Trigger settings (TRIGGER)
  - Recording media information
  - Recording folder name (FILE)
  - Recording file name (FILE)

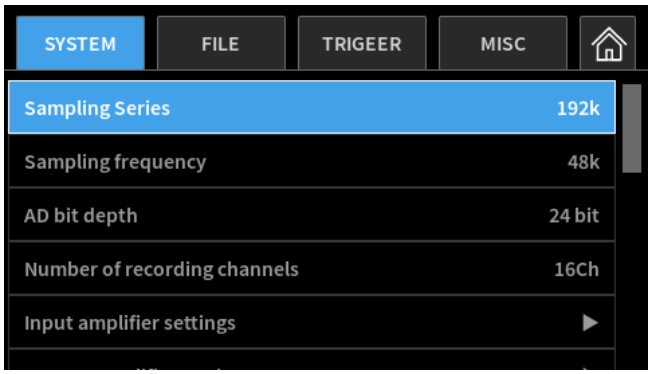
- MENU
  - SYSTEM
  - FILE
  - TRIGGER
  - MISC

- SYSTEM
  - Sampling series
  - Sampling frequency/bandwidth
  - AD bit depth
  - Number of recording channels
  - Input amplifier settings
    - Input voltage range
    - Coupling
    - IEPE current
    - Weighting
    - HPF
    - Channel name
    - Channel unit
    - Physical quantity conversion
    - TEDS information
    - Actual load calibration
    - Auto range
  - Output amplifier settings
    - Output voltage range
    - Output unit
  - Auto range
  - Voice memo
  - Monitored channel
  - Monitor output voltage range
  - Speaker source
  - Speaker volume
  - Cooling fans
  - TEDS
  - GPS settings
  - Sync settings

- FILE
  - Recording file settings
    - Recording device
    - Recording folder
    - Recording file
    - Comment
  - Playback file settings
  - Delete file
  - Format media
  - Media information

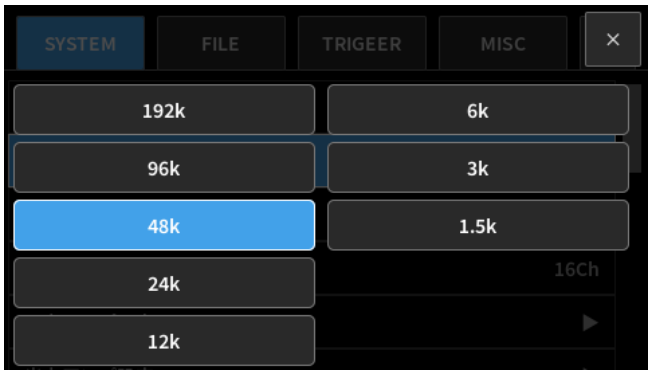
- TRIGGER
  - Mode
    - Trigger
      - Start conditions
        - Level trigger
          - Use
          - Logic
          - Count
          - Channel settings
            - Use
            - Edge
            - Level
        - External trigger
        - Timeout
          - Use
          - Time
      - Pre-trigger
      - Stop conditions
        - Level trigger
          - Use
          - Logic
          - Count
          - Channel settings
            - Use
            - Edge
            - Level
        - External trigger
        - Recording time
          - Use
          - Time
      - Post-trigger
      - Endless
      - Repetitions
    - Interval
      - Start time
      - Recording time
      - Interval time
      - Endless
      - Repetitions
    - Schedule
      - Schedule settings
      - Start time
      - Stop time
      - Endless
      - Repetitions

- MISC
  - Network
    - DHCP
    - IP address
    - Subnet mask
    - Gateway
    - NTP
      - Use
      - Server address
      - Status
    - Name
    - MAC address
    - Link speed
  - Display data
    - Display data
      - Bar meters
        - Display channels
        - Display format
      - Digital value
        - Display channels
      - Waveform
        - Display channels
  - Date and time
    - Set date and time
      - Set date and time
      - Display
    - Time difference
    - Automatic adjustment
  - LCD
    - Backlight dimming
    - Brightness
  - Beep
    - Button beep
    - Warning beep
  - Startup status
  - UPS
  - Parameter settings
    - Load parameters
    - Save parameters
    - Initialize settings
    - Factory reset
  - Sampling notation
  - Language (言語)
  - Serial number
  - Open source software license
  - Version



For details about the sampling frequency, AD bit depth and number of recording channels, see "Sampling frequencies and bandwidths" on page 77 and "Number of channels that can be recorded simultaneously" on page 77.

Sampling series



Set the sampling frequency series.
The four series options are 192 kHz, 200 kHz, 256 kHz and 131.072 kHz.

Sampling frequency

This shows the set sampling frequency.
The eight available sampling frequency options correspond to the current sampling series.

AD bit depth

Set the analog-digital conversion bit depth (quantization bits).
The options are 16-bit and 24-bit.

Number of recording channels

Set the number of recording channels.
The options are the possible number of recording channels for the current system.

Input amplifier settings

Set the input amplification range and physical quantity conversion (page 59).

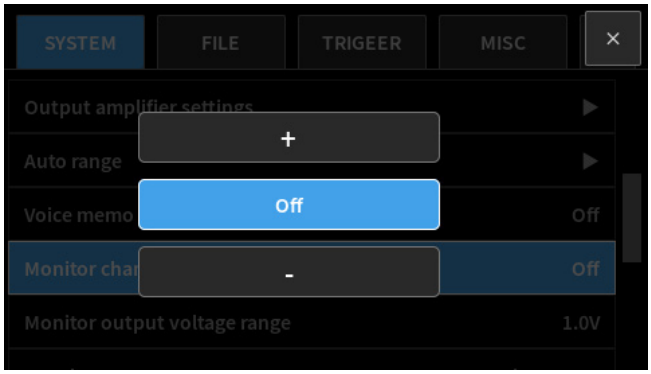
Output amplifier settings

Set the output amplification range along with input and output channel distribution during playback (page 61).

Voice memo

Turn voice memo recording on or off.
Voice memos are not recorded during the pre-trigger interval. Moreover, the beginnings of voice memos and the beginnings of data are aligned when played back, so the timing might be different from when recorded.

Monitored channel



Set the channel monitored.
The options are the channels available in the current system and Off.
Set this to Off when you do not want to output signals from the MONITOR OUT connector.

Monitor output voltage range

Set the monitoring output range.
The setting range is from 1.0 V to 5.0 V in 0.1V increments.

Speaker source

Select the signal output from the speaker.

Voice memo

Voice memos are output from the earphone or speaker during playback.

Monitor

The data from the channel set as the monitored channel are output from the earphone or speaker during recording and playback.

Speaker volume

Set the speaker volume.

Cooling fans

Set the operation of the fans.
The options are Normal and Stop on REC.
When set to Stop on REC, the fans will be kept off from the start of measurement for ten minutes or until recording stops if less than ten minutes.

- Set this to Stop on REC if the sound of the fans might affect measurements when, for example, measuring noise.
- If the fans have been stopped when recording, wait at least ten minutes before stopping the fans to record again. In particular, when using interval recording to record repeatedly, make sure the interval time is sufficient.

TEDS

This shows a list of TEDS data for connected sensors.

GPS settings

Use

Set this to On to use GPS.

Data recording

Turn this on to record GPS data.

Baud rate

Set the baud rate of the GPS receiver.

- Set this to 38400 baud usually.

Adjust time

Set the GPS time to the time of the internal clock.

GPS INFORMATION

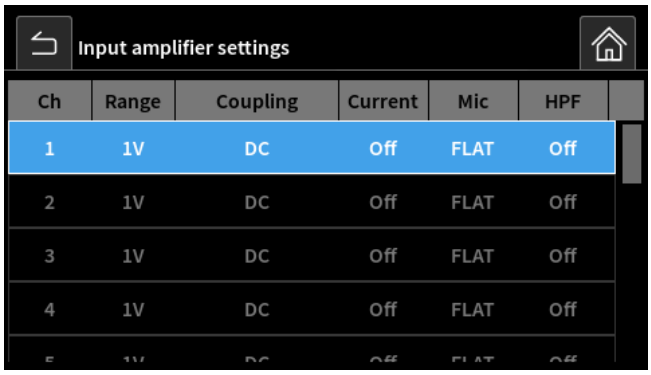
This shows the status of the GPS receiver.

Sync settings

See "10. Synchronization function" on page 47.

12-1. Input amplifier settings

From the SYSTEM menu, select the Input amplifier settings item and press the VALUE knob to open the "Input amplifier settings" screen.



12-1-1. Input channel

On the "Input amplifier settings" screen, press the VALUE knob to open the setting screen for the selected channel.

- The coefficient and offset values are recorded as information in header files. They do not affect the display, output signals or recording data of the WX-9000.

Input voltage range

The options are 50 V, 20 V, 10 V, 5 V, 2 V, 1 V, 0.5 V, 0.2 V and 0.1 V.

Coupling

The options are DC and AC.

DC:Use this when recording signals that include direct currents

AC:Use this when recording signals of 1 Hz or more

IEPE current

Set the IEPE sensor current.

The options are Off, 4 mA and 0.5 mA.

Weighting

Set the weighting filter.

The options are FLAT, A and C.

Continued on the next page ➡

HPF
Set the high pass filter.
The options are Off, 10 Hz and 20 Hz.

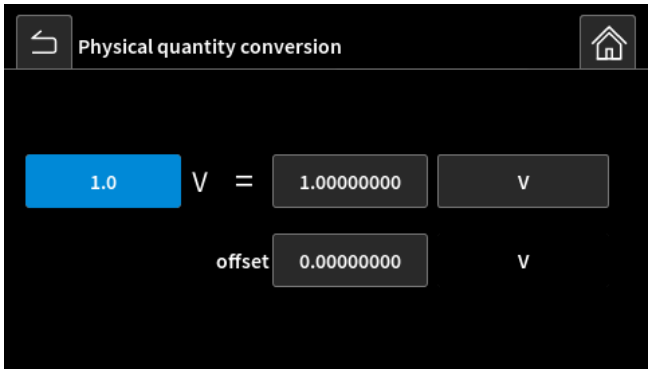
Channel name
Set the name of the channel.

- A maximum of 32 characters can be used for a channel name.
- See "11-3. Inputting characters as setting values" on page 55 for how to input characters.

Channel unit
Set the input signal unit.

- A maximum of eight characters can be used for a unit name
- See "11-3. Inputting characters as setting values" on page 55 for how to input characters.

Physical quantity conversion



Use this to apply a coefficient to the measured voltage to convert the physical quantity. The physical quantity is calculated using the following formula.
Physical quantity
= measured voltage × Physical quantity conversion coefficient + Offset

Offset
Use this to subtract an offset amount when calculating the measured voltage.

- The offset value can have a maximum of ten digits, including digits after the decimal place.
- See "11-3. Inputting characters as setting values" on page 55 for how to input numbers.

TEDS information
This shows TEDS information.

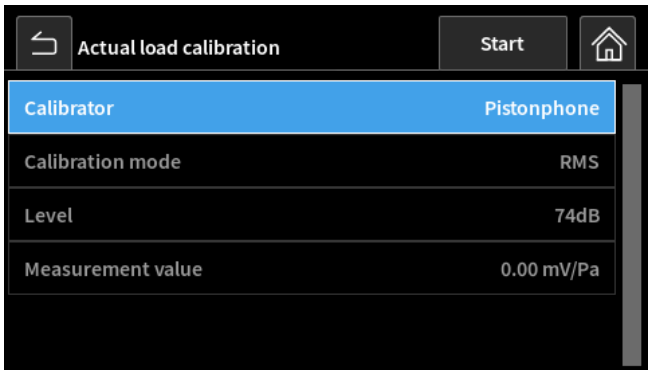
Actual load calibration
The output voltage when an actual load is applied to the sensor can be measured, and the physical quantity conversion coefficient can be calculated (page 60).

Auto range
Amp input ranges can be set automatically by inputting a temporary signal before recording (page 61).

Previous channel (◀)
This opens the setting screen of the previous channel.

Next channel (▶)
This opens the setting screen of the next channel.

12-1-2. Actual load calibration



Calibrator
Pistophone: Select when calibrating a microphone.
Exciter: Select when calibrating a piezoelectric transducer.

Calibration mode
RMS: Calibrate using RMS (root mean square) values.
Peak: Calibrate using peak values.

Level
When the calibrator is a pistonphone
74 dB, 94 dB, 114 dB
Use when the calibrator is an exciter
4.9 m/s^2, 9.8 m/s^2, 10.0 m/s^2

Measurement value
The measurement value is shown during calibration.

Calibration procedures

1 Attach the sensor to the calibrator.
To calibrate a microphone, connect it to a pistonphone.
To calibrate a piezoelectric transducer, connect it to an exciter.

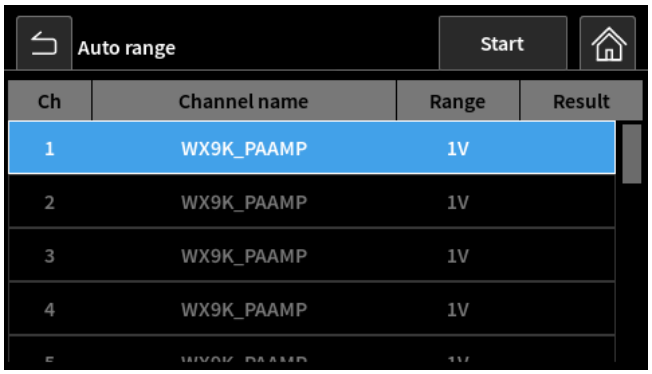
2 Select the value of the actual load to be applied to the sensor by the calibrator.

3 Set the calibrator, calibration mode and level.

4 After the actual load is applied to the sensor by the calibrator, tap the "Start" button to start measurement.

5 When the measured value becomes stable, tap the "Stop" button.

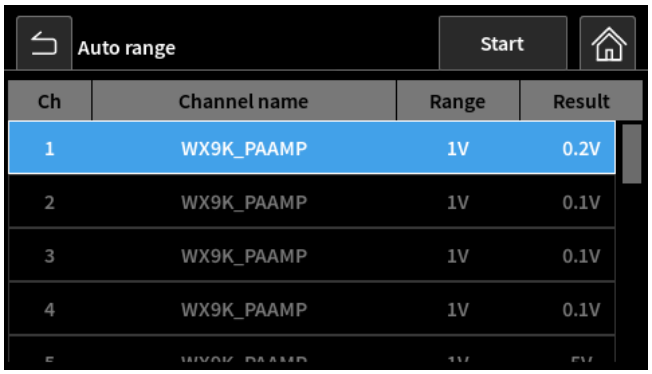
12-1-3. Auto range



1 Tap the "Start" button.

2 Input a signal.

3 Tap the "Stop" button.



From the input signal level, suitable ranges will be shown in the Result column, and ranges will be changed.

- If there are channels that have been AC coupled, measurement will not start for ten seconds after starting the auto range function. Input signals after ten seconds have elapsed.
- All channels are subject to auto range. Use WX9K Navi If the selection of specific channels is needed.

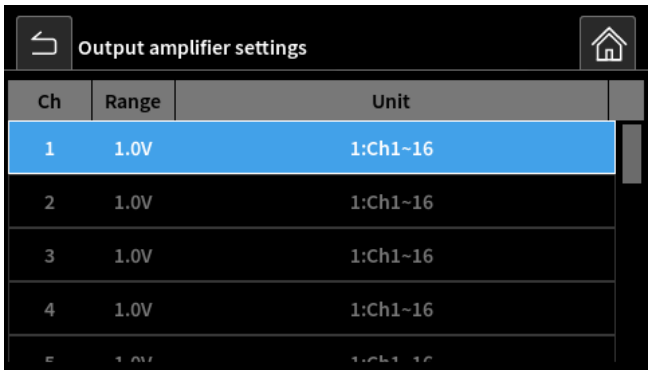
Limitations on synchronization function use

Execution of the auto range function is conducted from the leader system.

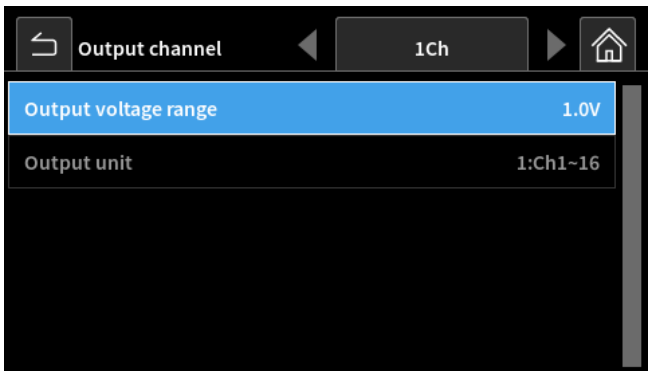
Auto range result screens will not be shown on follower systems. Check the results on the Settings Screen.

12-2. Output amplifier settings

In the SYSTEM menu, select "Output amplifier settings" and press the VALUE knob to open the "Output amplifier settings" screen.



12-2-1. Channel settings



On the "Output amplifier settings" screen, press the VALUE knob to open the setting screen for the selected channel.

Output voltage range

Set within the setting range from 1.0 V to 5.0 V in 0.1V increments.

Output unit

Set the output unit during playback.

12-2-2. Output unit settings

Ordinarily, data recorded with an expansion unit will be output by the same expansion unit when playing back. By changing output unit settings, the relationships between expansion units used during recording and expansion units used during playback can be changed.

When channel configurations are different during recording and playback

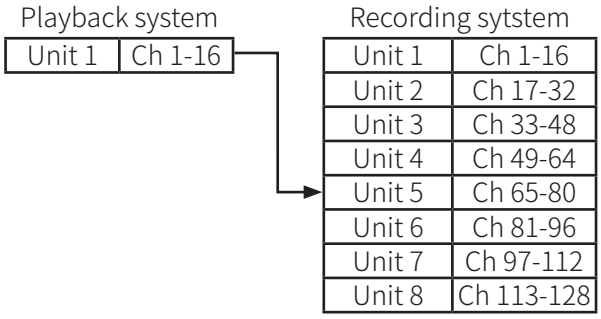
When recording multiple channels of data, the configuration of channels might differ during recording and playback.

For example after recording numerous channels at a measurement site, when playing back data on a system with fewer channels, you will need to select from among the numerous channels of recorded data for analog output from the playback system.

Setting example 1

When using a WX-9016 system to play back a 128-channel file recorded using a WX-9128 system, in order to play back data recorded on channels 65-80 with the WX-9016 they must be set to channels 1-16 for analog output.

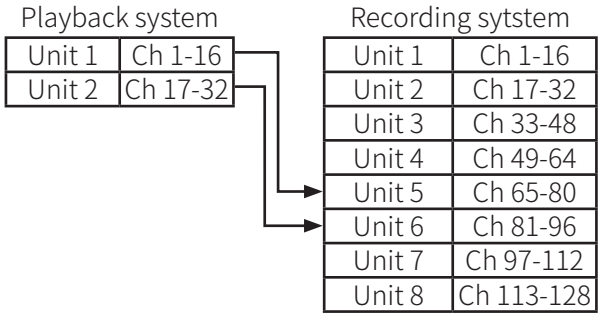
Output unit setting:
Unit 1 → Unit 5



Setting example 2

When using a WX-9032 system to play back a 128-channel file recorded using a WX-9128 system, in order to play back data recorded on channels 65-96 with the WX-9032 they must be set to channels 1-32 for analog output.

Output unit settings:
Unit 1 → Unit 5
Unit 2 → Unit 6

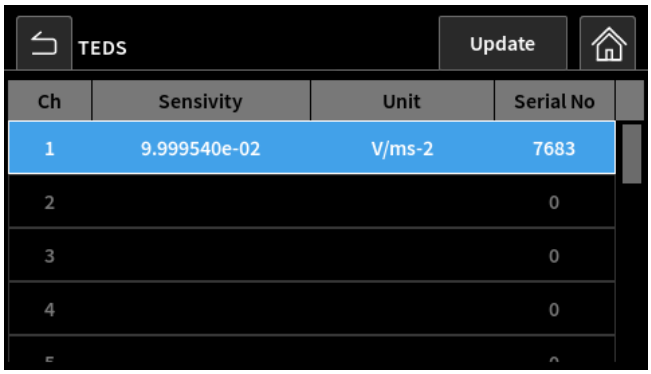


12-3. Auto range

See "12-1-3. Auto range" on page 61.

12-4. TEDS

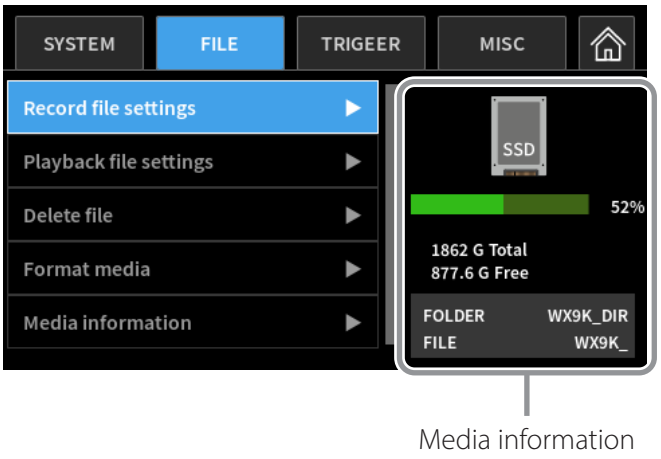
This shows a list of TEDS data for connected sensors.



12-4-1. Loading TEDS data

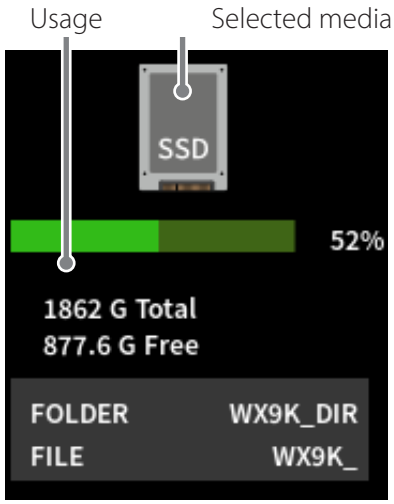
Tap the Update button to refresh TEDS data.
The following screen appears while the TEDS data is being loaded.

- When TEDS data is loaded, it will be set automatically as the calibration value.



13-1. Media information

This screen shows information about the selected recording media.



Selected media
Recording files will be written to the media shown.
This will not be shown if no media is loaded.

Usage
The amount of the total media capacity used is shown graphically and as a percentage (%).

Total
Total media capacity

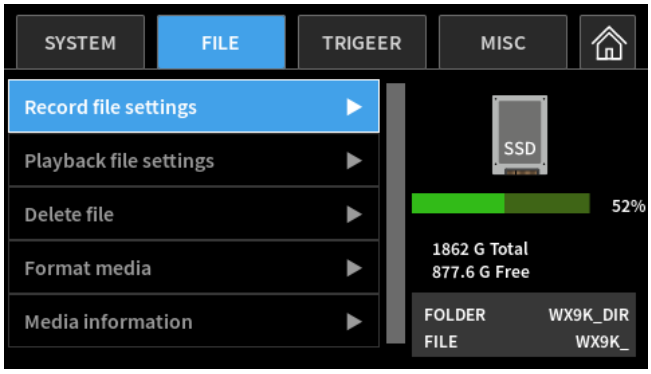
Free
Amount of open space on the media

FOLDER
The name of the folder where recording data is saved

FILE
The name of the file where recording data is saved

13-2. Recording file settings

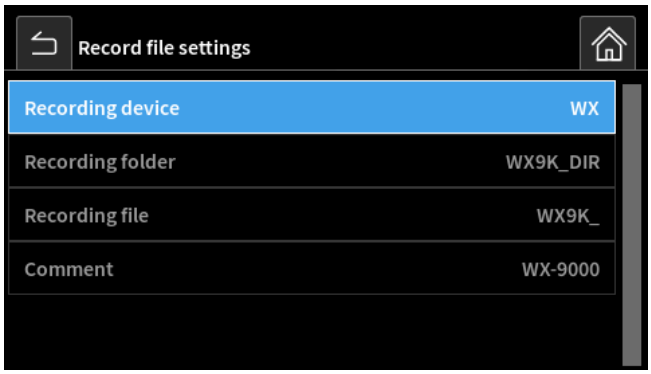
In the FILE menu, select "Record file settings" and press the VALUE knob to open the "Record file settings" screen.



13-2-1. Recording device

Select the media where recording files are saved.
The options are WX, PC and WX & PC.

- If the recording device is set to "PC" or "WX & PC", recording cannot start if WX9K Navi is not connected.
- When the recording device is set to "PC", recording will stop if WX9K Navi is disconnected during recording.



13-2-2. Recording folder

This sets the recording folder.

- See "11-3. Inputting characters as setting values" on page 55 for how to input characters.

13-2-3. Recording file

This sets the recording file.

- See "11-3. Inputting characters as setting values" on page 55 for how to input characters.

13-2-4. Comment

Set the recording file comment.

- See "11-3. Inputting characters as setting values" on page 55 for how to input characters.

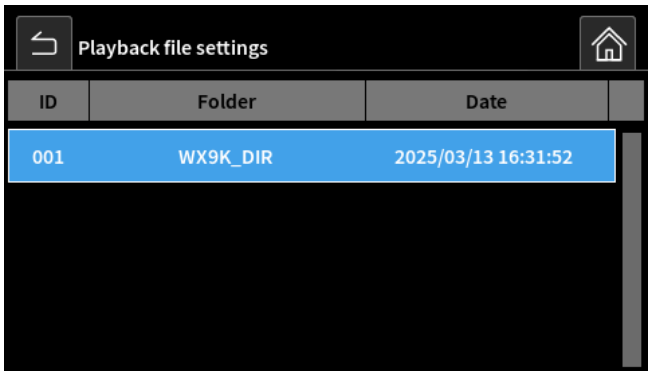
13-3. Playback file settings

In the FILE menu, select "Playback file settings" and press the VALUE knob to open the "Playback file settings" screen.

ATTENTION

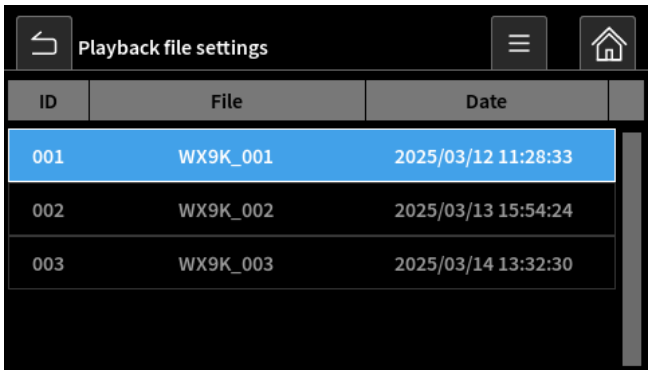
The maximum number of folders/files that can be shown on the "Folder selection" screen or "File selection" screen is 999. If more than 999 are recorded, they will not be shown in the list.

13-4. Folder selection



Select the folder with the file that you want to play back.

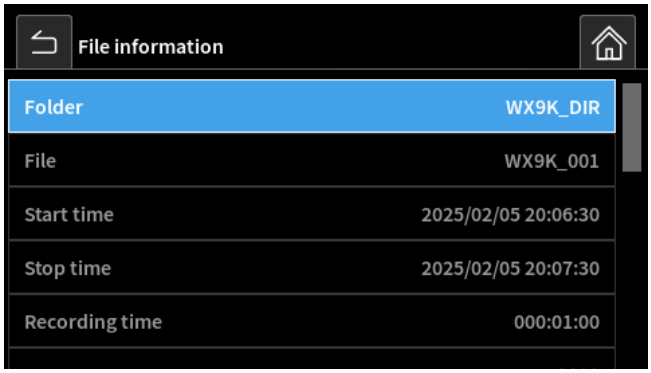
13-5. File selection



On this screen, you can select a file for playback.
This screen shows a list of files with their ID numbers, names and recording dates.

File Information

This shows information about the settings of the selected file at the time of recording.

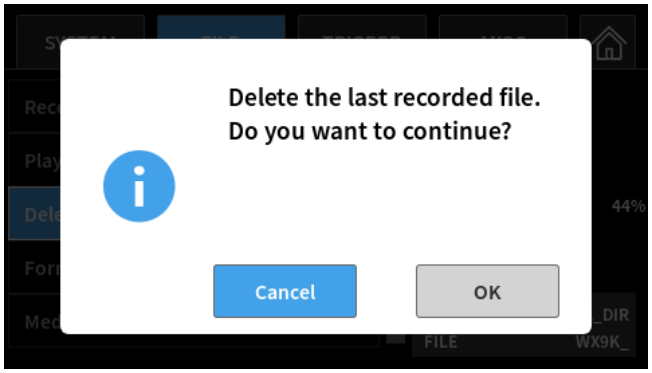


Tap the ⮌ button to return to the "File selection" screen.

13-6. Deleting files

The most recently recorded file (only) can be deleted. Deletion is not possible after the media has been changed or the system turned off.

In the FILE menu, select Delete file and press the VALUE knob.

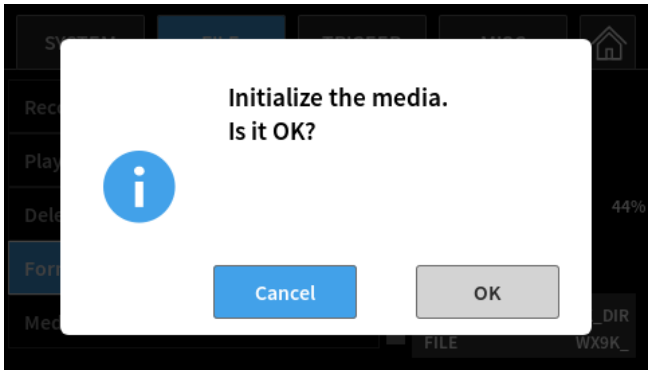


When the confirmation screen appears, turn the VALUE knob to select OK and press the VALUE knob.

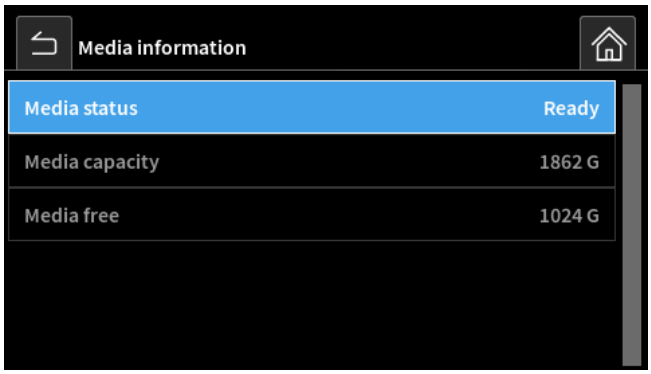
13-7. Formatting media

Media can be formatted. In the FILE menu, select Delete file and press the VALUE knob.

Turn the VALUE knob to select OK and press the VALUE knob.



13-8. Media information



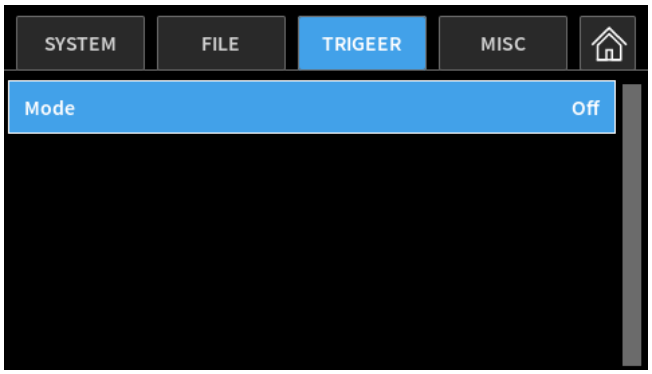
This shows information about the media.

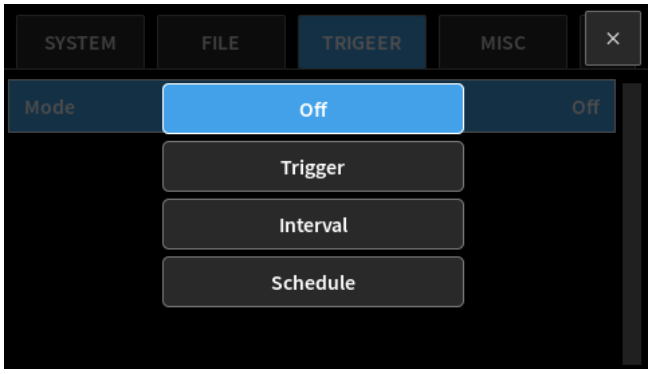
14. TRG settings

See "8-5. Setting triggers" on page 42 for details about recording operations using triggers.

14-1. Mode

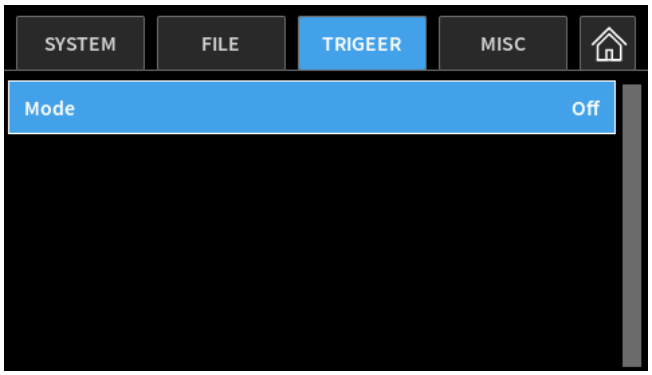
Set the trigger mode.





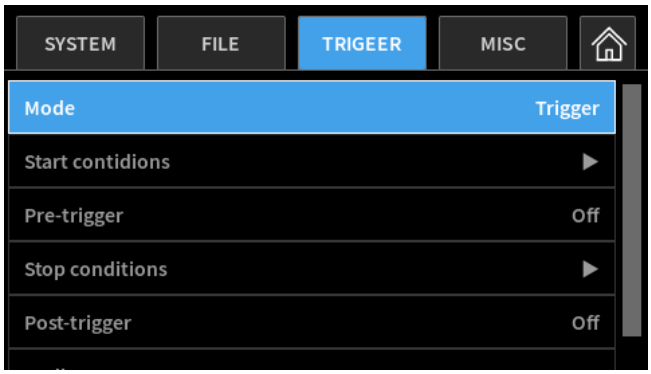
The options are Off, Trigger, Interval and Schedule.

14-1-1. Off



Use the "Off" setting to disable trigger recording.
When using this setting, you must use the front panel transport controls or send commands to the system via LAN to start and stop the recording of measurements.

14-1-2. Trigger



Pre-trigger
Input the data quantity.

- The amount of time that measurements are recorded is equal the data quantity ÷ the sampling frequency.

Post-trigger
Input the data quantity.

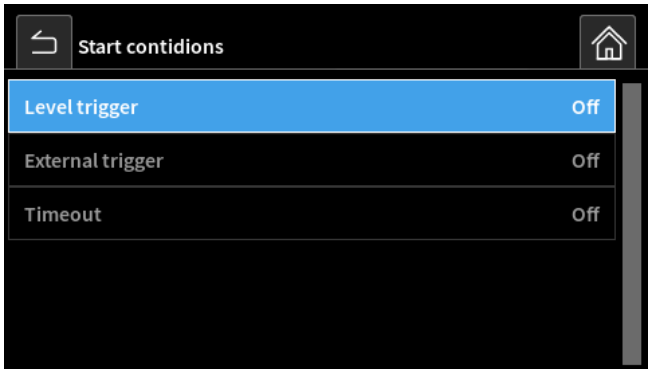
Endless
If "Endless" is set to On, recording and pausing (becoming "record ready") will repeat until one of the following conditions is met.

- The recording capacity of the recording media becomes full
- The file name suffix exceeds the number of digits (3 for WX and 3–5 for PC)
- Recording is stopped manually

Repetitions
If Endless is "Off", input the number of recording repetitions.

- 0 and 1 have the same effect, which is recording only once.

14-1-2-1. Start conditions



Level trigger
Set the level and Up/Down conditions for each channel.

External trigger
The options are On and Off.

Timeout
If the conditions set to start recording are not met within a specified time, recording will be forced to start automatically.

14-1-2-2. Stop conditions

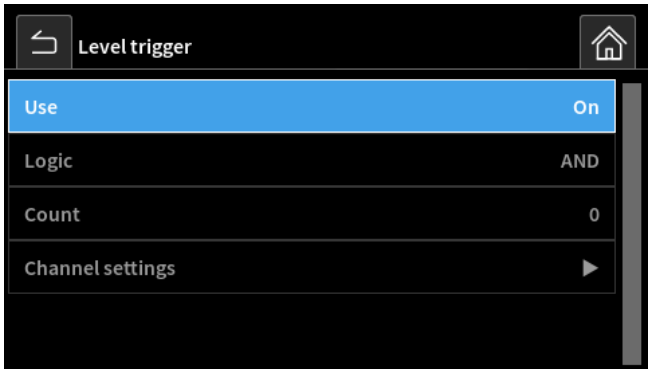
Level trigger
Set the level and Up/Down conditions for each channel.

External trigger
The options are On and Off.

Recording time
Set the recording time.

14-1-2-3. Level trigger

Set the level trigger conditions for each channel.



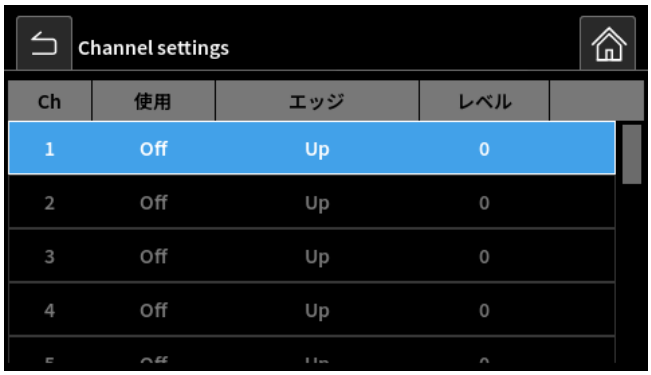
Logic
This shows the current setting.
Set when there are multiple conditions to determine whether one or all must be fulfilled.

- If multiple AND conditions are set for level triggers, input square waves as the trigger signal. Differences in input ranges between channels could result in triggers not being realized.
  In addition, monitor a channel in the same unit.

Count
This shows the current setting.

Channel settings
Press the VALUE knob to open the settings screen.

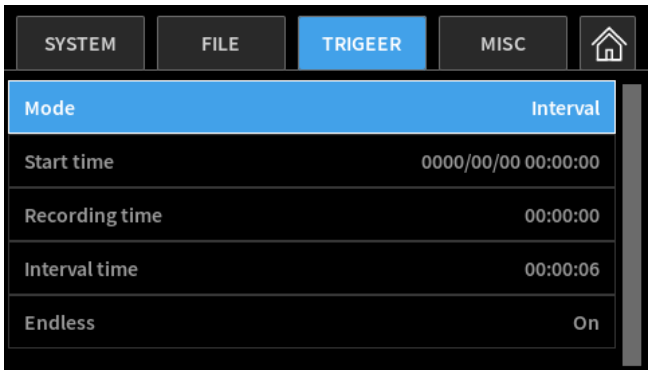
14-1-2-4. Channel settings

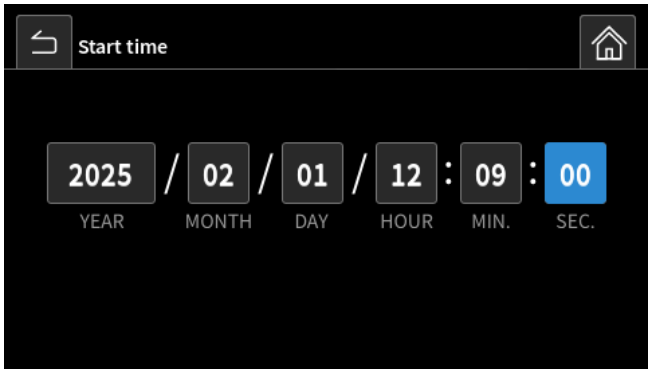


Edge
The options are Up and Down.

Level
Enter an amount of the settings range as a %.

14-1-3. Interval





Start time
Set the recording start time.

Recording time
Set the amount of time from when the recording starts until it stops.

Interval time
Set the amount of time that the system stays in a record ready state from the time one recording ends until the next recording starts.

- Set the Interval time to at least six seconds. If the value is set to less than six seconds, it will be changed to six seconds.

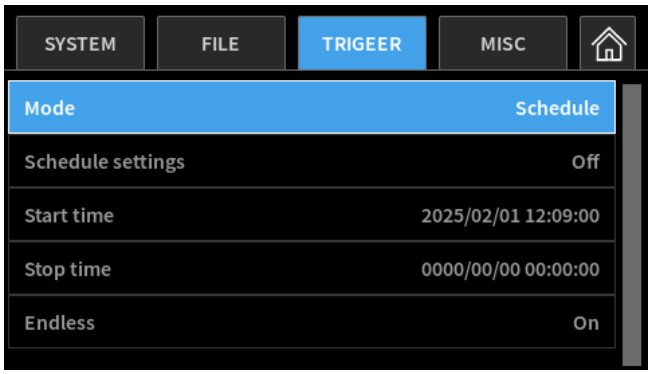
Endless
If "Endless" is set to On, recording and pausing (becoming "record ready") will repeat until one of the following conditions is met.

- The recording capacity of the recording media becomes full
- The file name suffix exceeds the number of digits (3 for WX and 3–5 for PC)
- Recording is stopped manually

Repetitions
If Endless is "Off", set the number of recording repetitions.

- 0 and 1 have the same effect, which is recording only once.

14-1-4. Schedule



Schedule settings
Set the repetition conditions.

Start time
Set the recording start time.

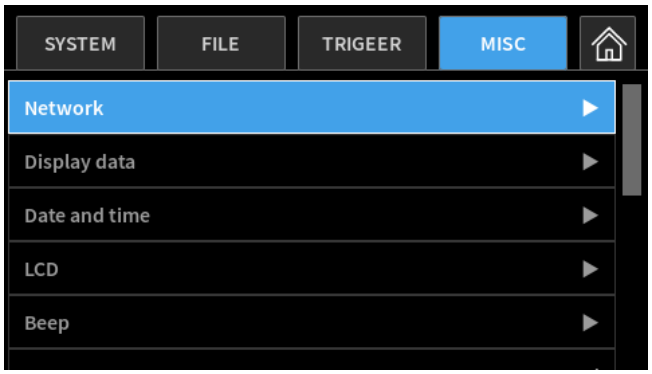
Stop time
Set the recording stop time.

Endless
If "Endless" is set to On, recording and pausing (becoming "record ready") will repeat until one of the following conditions is met.

- The recording capacity of the recording media becomes full
- The file name suffix exceeds the number of digits (3 for WX and 3–5 for PC)
- Recording is stopped manually

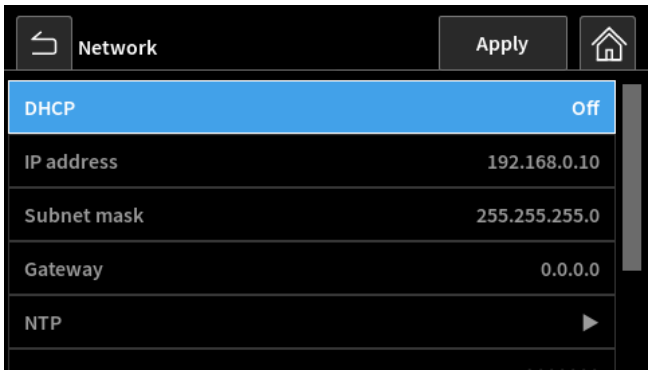
Repetitions
If Endless is "Off", set the number of recording repetitions.

- 0 and 1 have the same effect, which is recording only once.



15-1. Network

Follow the instruction of your LAN administrator when making network settings.
After changing settings, tap the Apply button.



- See "11-4. Inputting numbers as setting values" on page 55 for how to input numbers.

Depending on the DHCP setting, other input items will change.

When DHCP is Off, the following items can be set.
IP address
Subnet mask
Gateway

When DHCP is On, the following items show values set by DHCP, but they cannot be set from this system.
IP address
Subnet mask
Gateway

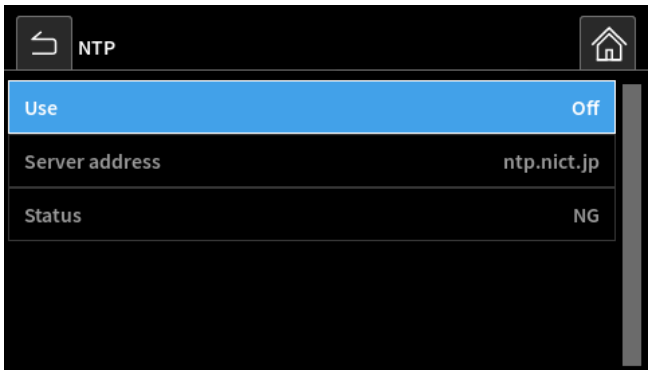
NTP
When on, an NTP server will be used to adjust the time.

Name
Set the name that is used to identify this system when using the included WX9K Navi software.

MAC address
This shows this system's MAC address.

Link speed
This shows the link speed.

15-1-1. NTP



Use
Set this to On to use NTP.

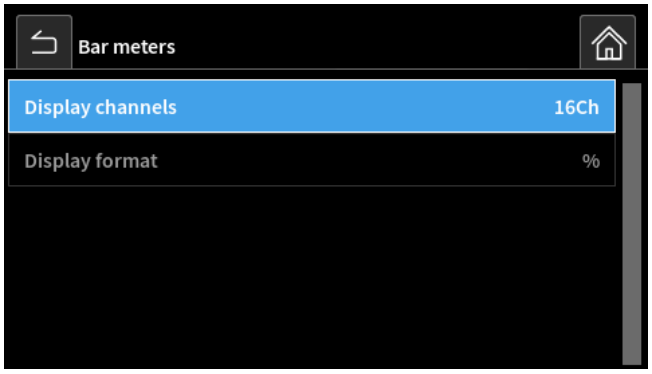
Server address
Set the IP address of the NTP server or the domain name.

Status
This will be OK if the time has been properly adjusted using NTP.

15-2. Display data

Set how the signal level is shown.
The options are Bar meter, Digital value and Waveform.

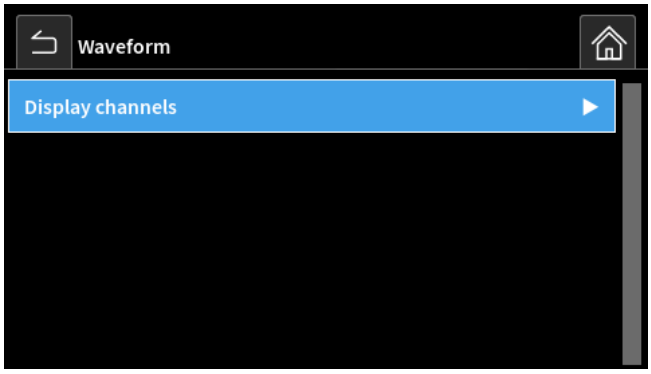
15-2-1. Bar meters



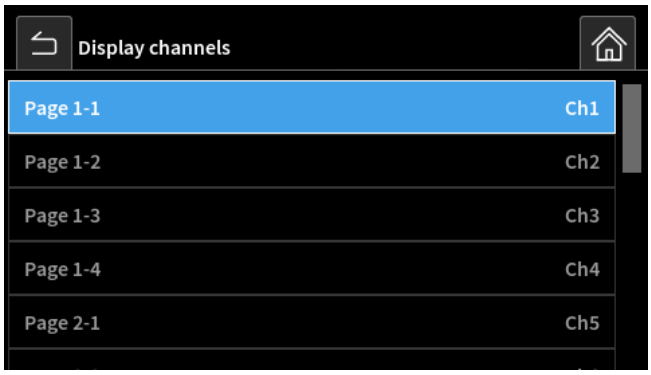
Display channels
Select 16ch, 32ch or 64ch to set the number of channels to show at the same time.

Display format
This sets the unit for the data shown.
%: Data is shown as ±100%.
dB: Data is shown as dB.

15-2-2. Digital value and Waveform



Digital values or waveforms are shown 4 channels at a time. The display of 4 channels is called a page. The channels shown can be changed by changing the page on the Home Screen.

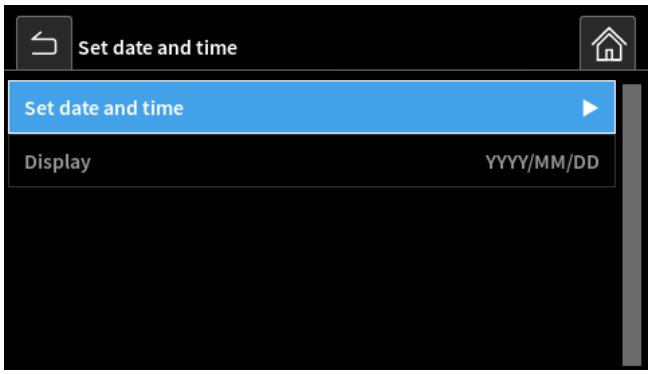


Use the "Display channels" setting to set which channels are shown on each page.

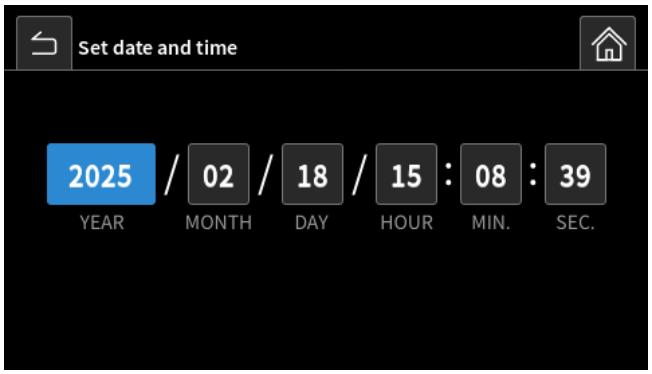
- The "Display channels" setting is shared by "Digital value" and "Waveform".

15-3. Date and time

Set the date and time of the internal clock.



Set date and time



- See "11-4. Inputting numbers as setting values" on page 55 for how to input numbers.
- The time is set according to the settings made for the YEAR, MONTH, DAY, HOUR, MIN and SEC items.

Display setting

YYYY-MM-DD
MM-DD-YYYY
DD-MM-YYYY

Set the time display format.
The year, month and day are shown by the following characters.
YYYY: Year
MM: Month
DD: Day

Time difference

Set the time difference from UTC.

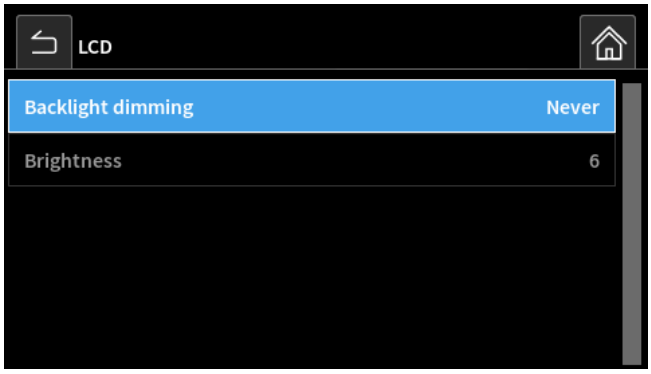
ATTENTION

The time difference that was set at the time of recording will be used to show the recording start and stop times of files that have already been recorded.

Automatic adjustment

Off: The time will not be adjusted automatically.
NTP: NTP will be used to adjust the time.
GPS: GPS will be used to adjust the time.

15-4. LCD



Backlight dimming

Set the time until the backlight turns off automatically if no buttons are used.
Never: The backlight will always stay lit.
1 min, 5 min, 30 min: The backlight will turn off if the selected time passes without operation.

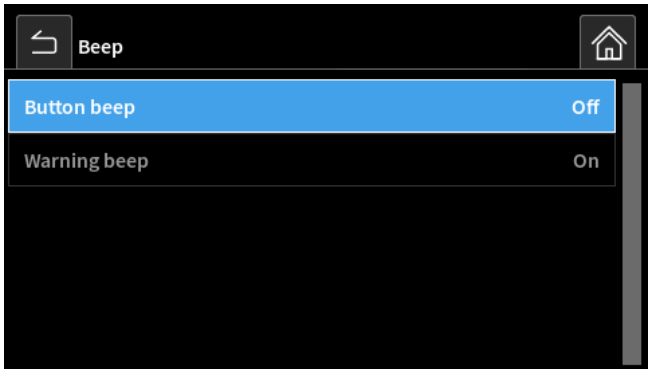
Brightness

Adjust the brightness of the backlight.

- If you use any controls while the backlight is off, the backlight will turn on again.

15-5. Beep

Turn the beeping (alarm) sounds on and off.



Button beep
Set whether or not the system beeps when buttons are used.

Warning beep
Set whether or not the system beeps when warnings occur.

15-6. Startup status

Select the initial state after startup.

Stopped
After startup, the unit will be stopped.

Record ready
After startup, the unit will be record ready.

- If becoming record ready is not possible, the unit will be stopped.

Record
After startup, the unit will start recording.

- If starting recording is not possible, the unit will be stopped.

15-7. UPS

This sets whether or not to use UPS. Set this to On to use UPS.

15-8. Parameter settings

The setting values used by the system can be saved and loaded.

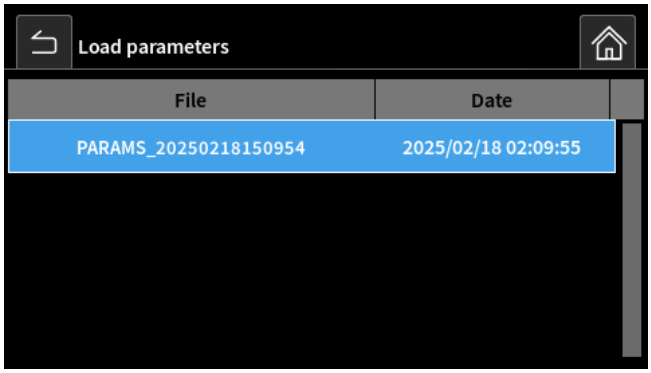
NOTE

Network settings are not saved.

15-8-1. Load parameters

Use this to load setting values.

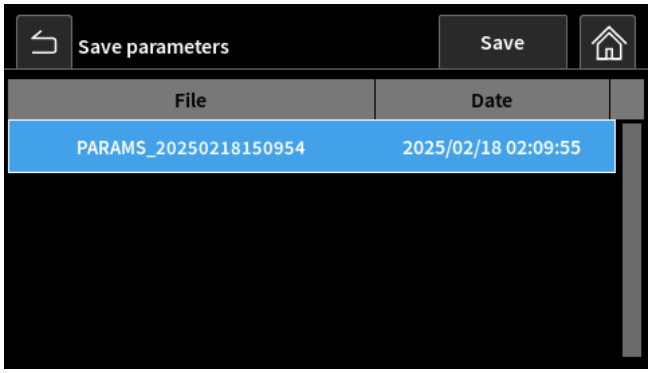
Select the file to load.



15-8-2. Save parameters

Save the current settings used by the system.

Set the name of the saved file.



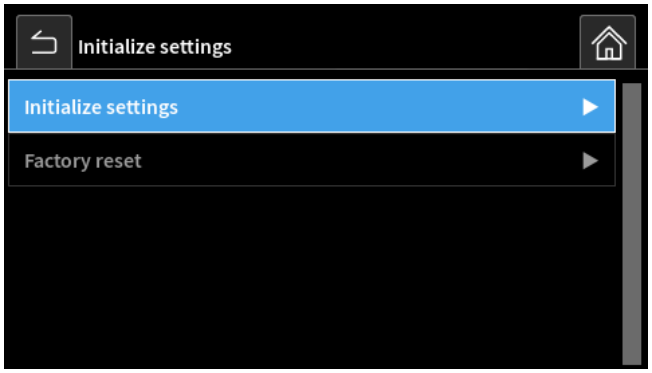
To overwrite an existing file, select the file, and press the VALUE knob. After selecting OK on the overwriting confirmation screen, press the VALUE knob to return to the "Parameter settings" screen.

To save a new file, tap the "Save" button to input the file name.

Tapping "Enter" saves the settings and returns to the "Parameter settings" screen.

15-8-3. Initialize settings

System settings can be initialized.



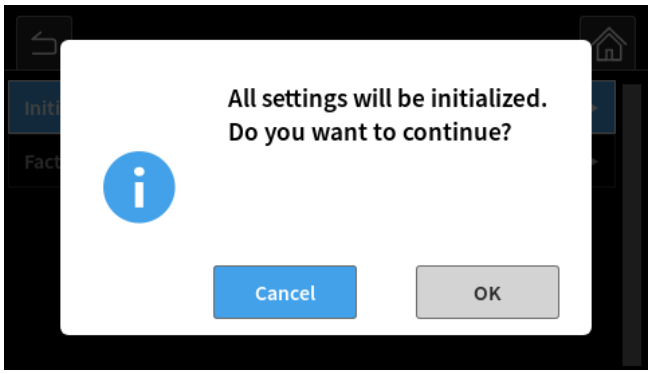
Initialize settings

This initializes all settings, except network settings, to their factory default values.

Factory reset

This initializes all settings, including network settings, to their factory default values.

When initialization is selected, a confirmation screen will open.



To initialize, select the "OK" button and press the VALUE knob.

15-9. Sampling notation

Select what is shown for sampling.
Sampling frequency: This shows the frequency.
Sampling bandwidth: This shows the bandwidth.

- See "Sampling frequencies and bandwidths" in "17. Specifications" on page 77 for information about the relationship between sampling frequencies and bandwidths.
- Regardless of this setting, the sampling frequency will be written to the header files of recording data.

15-10.Language (言語)

The language shown can be set to Japanese or English. Select Language and press the VALUE knob to change the setting of the selected item.

15-11.Serial number

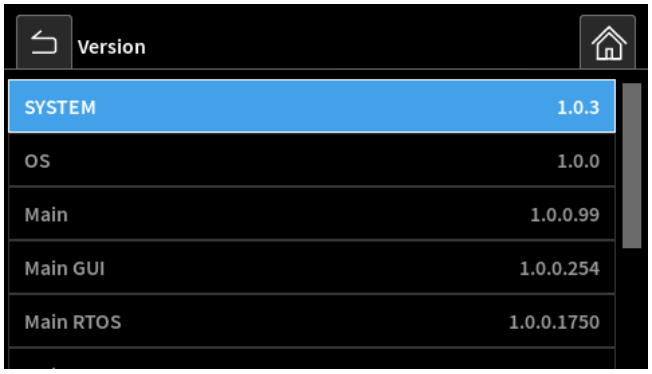
This shows the serial numbers of the recording and expansion units.

15-12.Open source software license

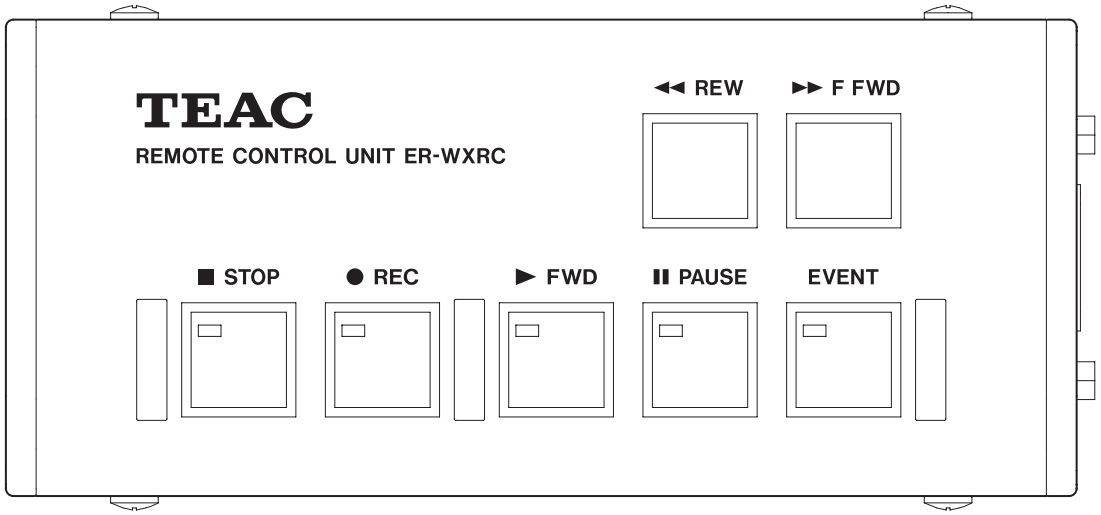
This shows license information for the open source software used in this system.

15-13.Version

This screen shows the versions of the programs used within the WX-9000 recording unit and the AU-WX9000EPIO)EPIO expansion units.



16-1. Remote control unit



This is a simple remote control dedicated to the operation of the recording unit transport buttons from a distance.
Connect the remote control to the DIGITAL CONTROL input/output connector on the rear panel of the recording unit with the included cable.

EVENT button
This adds an event mark.

The following buttons function in the same way as the recording unit transport buttons.

■ STOP button
Press this to stop recording and playback.

● REC button
Press this when the system is stopped to make it record ready.

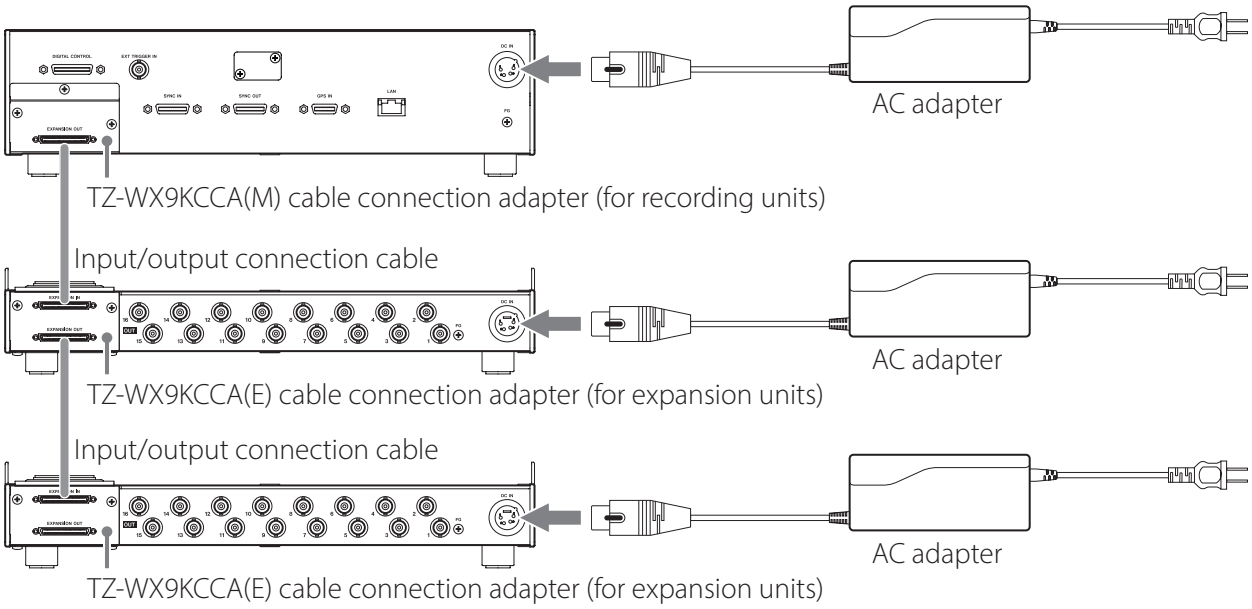
Play (► FWD) button
Press this when the system is stopped or playback ready to start playback.
Press this when the unit is record ready to start recording.

II PAUSE button
Press this when the system is stopped or playing back to make it playback ready.
Press this when recording to make the system record ready.

Search (◄◄ REW/ ►► F FWD) buttons
Use these to search playback files.

16-2. Cable connection adapters

The WX-9000 recording unit and AU-WX9000EPIO expansion units can also be used without stack connections. Connect recording and expansion units using cable connection adapters and input/output connection cables as shown below.



- Follow the procedures in the operation manual included with cable connection adapters and attach cable connection adapters to the recording and expansion units.
- The maximum length for input/output connection cables is 50 meters.
- Connect AC adapters to all recording and expansion units.
- Depending on the lengths of the input/output connection cables, the number of simultaneous recording channels could be limited.

17-1. Recording unit (WX-9000)

Recording media

SSD

Recording capacity	1 TB – 4 TB

SDHC/SDXC

Recording capacity	32 GB – 128 GB

- Media that has been verified to operate with this system
  We provide a list of media that we have verified for operation with this system on our Information Products Division data recorders website.
  https://datarecorder.jp/en/
  You can also contact us. For contact information, see the last page.

Sampling frequencies and bandwidths

Series ① (192kHz series): Corresponds to DAT/audio sampling frequencies
Series ② (200kHz series): Corresponds to integer frequencies
Series ③ (256kHz series): Corresponds to frequency axis resolution during 2^N FFT analysis
Series ④ (131.072kHz series): Corresponds to frequency axis resolution during 2^N FFT analysis

Series ①		Series ②		Series ③		Series ④	
Frequency (kHz)	Bandwidth (kHz)	Frequency (kHz)	Bandwidth (kHz)	Frequency (kHz)	Bandwidth (kHz)	Frequency (kHz)	Bandwidth (kHz)
				256.00	100.00		
192.00	80.00	200.00	80.00	204.80	80.00	131.072	51.2
96.00	40.00	100.00	40.00	102.40	40.00	65.536	25.60
48.00	20.00	50.00	20.00	51.20	20.00	32.768	12.80
24.00	10.00	20.00	8.00	25.60	10.00	16.384	6.40
12.00	5.00	10.00	4.00	12.80	5.00	8.192	3.20
6.00	2.50	5.00	2.00	5.12	2.00	4.096	1.60
3.00	1.25	2.00	0.80	2.56	1.00	2.048	0.80
1.50	0.625	1.00	0.40	1.28	0.50	1.024	0.40

Number of channels that can be recorded simultaneously

Sampling frequency (kHz)				SSD		SD	
Series ①	Series ②	Series ③	Series ④	16-bit	24-bit	16-bit	24-bit
		256.00		64 channels	32 channels	8 channels	–
192.00	200.00	204.80	131.072	80 channels	32 channels	16 channels	8 channels
96.00	100.00	102.40	65.536	128 channels	80 channels	32 channels	16 channels
48.00	50.00	51.20	32.768	128 channels	128 channels	64 channels	32 channels
24.00	20.00	25.60	16.384	128 channels	128 channels	128 channels	64 channels
12.00	10.00	12.80	8.192	128 channels	128 channels	128 channels	128 channels
6.00	5.00	5.12	4.096	128 channels	128 channels	128 channels	128 channels
3.00	2.00	2.56	2.048	128 channels	128 channels	128 channels	128 channels
1.50	1.00	1.28	1.024	128 channels	128 channels	128 channels	128 channels

Recording time (in hours:minutes:seconds)

The following tables show approximate recording times for different capacities according to the combination of sampling frequency, recording bit depth and number of recording channels.

Using 1TB SSD

16-bit, with voice memos, without GPS

Frequency (kHz)	Bandwidth (kHz)	8 channels	16 channels	32 channels	48 channels	64 channels	80 channels	96 channels	112 channels	128 channels
256.00	100.00	67:40:52	33:52:25	16:56:42	11:17:55	8:28:29	–	–	–	–
204.80	80.00	84:33:37	42:19:54	21:10:43	14:07:19	10:35:33	8:28:29	–	–	–
102.40	40.00	168:42:34	84:33:37	42:19:54	28:13:57	21:10:43	16:56:42	14:07:19	12:06:19	10:35:33
51.20	20.00	335:47:14	168:42:34	84:33:37	56:25:09	42:19:54	33:52:25	28:13:57	24:12:08	21:10:43
25.60	10.00	665:08:30	335:47:14	168:42:34	112:39:20	84:33:37	67:40:52	56:25:09	48:22:14	42:19:54
12.80	5.00	1305:16:42	665:08:30	335:47:14	224:34:56	168:42:34	135:05:56	112:39:20	96:36:24	84:33:37
5.12	2.00	3089:00:13	1616:24:22	827:27:51	556:03:37	418:43:18	335:47:14	280:16:28	240:30:45	210:37:51
2.56	1.00	5673:16:06	3089:00:13	1616:24:22	1094:35:25	827:27:51	665:08:30	556:03:37	477:42:58	418:43:18
1.28	0.5	9752:55:19	5673:16:06	3089:00:13	2122:16:26	1616:24:22	1305:16:42	1094:35:25	942:27:53	827:27:51

24-bit, with voice memos, without GPS

Frequency (kHz)	Bandwidth (kHz)	8 channels	16 channels	32 channels	48 channels	64 channels	80 channels	96 channels	112 channels	128 channels
256.00	100.00	33:52:25	16:56:42	8:28:29	–	–	–	–	–	–
204.80	80.00	42:19:54	21:10:43	10:35:33	–	–	–	–	–	–
102.40	40.00	84:33:37	42:19:54	21:10:43	14:07:19	10:35:33	8:28:29	–	–	–
51.20	20.00	168:42:34	84:33:37	42:19:54	28:13:57	21:10:43	16:56:42	14:07:19	12:06:19	10:35:33
25.60	10.00	335:47:14	168:42:34	84:33:37	56:25:09	42:19:54	33:52:25	28:13:57	24:12:08	21:10:43
12.80	5.00	665:08:30	335:47:14	168:42:34	112:39:20	84:33:37	67:40:52	56:25:09	48:22:14	42:19:54
5.12	2.00	1616:24:22	827:27:51	418:43:18	280:16:28	210:37:51	168:42:34	140:42:19	120:40:27	105:38:09
2.56	1.00	3089:00:13	1616:24:22	827:27:51	556:03:37	418:43:18	335:47:14	280:16:28	240:30:45	210:37:51
1.28	0.50	5673:16:06	3089:00:13	1616:24:22	1094:35:25	827:27:51	665:08:30	556:03:37	477:42:58	418:43:18

- The recording times given in the above tables are approximations.
  Actual recording times might differ depending on the recording media used.
- The number of recording channels is the total number of analog input channels.

- You can use the following formula as a guide to calculate approximate recording times for other recording media.

  Approximate recording time (seconds) = effective recording capacity/(sampling frequency in Hz × number of channels × analog-digital conversion bit depth in bytes + 8000)

  Effective recording capacity: recording capacity – reserved space (in bytes)
  Recording capacity: nominal media capacity in bytes (example: 1TB = 1 × 1000 × 1000 × 1000 × 1000)
  Reserved space: approximately 50 MB for headers and other files besides user data
  Analog-digital conversion bit depth: number of bytes for the quantization bit depth (4 for 24-bit or 2 for 16-bit)
  8000: voice memo transmission speed at 8kHz fixed sampling frequency with 8-bit quantization (8000 bytes/sec)

Calculation example

The recording time for 1TB capacity with 16 recording channels at 102.4kHz sampling frequency and 16-bit quantization is calculated as follows.

Recording time (seconds) = (1 × 1000 × 1000 × 1000 × 1000 – 50 × 1024 × 1024)/(102.4 × 1000 × 16 × 2 + 8000)
= 304416 (seconds) = 84:33:37

Voice memo input and output

Sampling frequency	8 kHz
Quantization bit depth	8-bit
File format	WAV file
Number of voice memo input channels	1 (mono)
Mic input jack connector	3.5mm TS mini jack
Earphone jack connector	3.5mm TS mini jack

- Speaker output is disabled when an earphone is connected.

Voice memo output volume adjustment function
The output level can be adjusted using the WX9K Navi app or the hardware controls.

Voice memo or monitoring signal selection function
The signal source for voice memo output can be set to either the voice memo or the monitoring output.

Internal clock

Clock precision	±2 PPM (at 25°C)
Battery life	10 or more years (at 25°C)

External interfaces

LAN	1000BASE-T connector × 1 RJ-45
DIGITAL CONTROL	External control input/output connector × 1 Angled, half-pitch, 36-pin Hirose DX10A-36S
EXT TRIGGER IN	External trigger signal input connector × 1 BNC connector
SYNC IN	Recording synchronization input connector × 1 Angled, half-pitch, 28-pin Hirose DX10A-28S
SYNC OUT	Recording synchronization output connector × 1 Angled, half-pitch, 28-pin Hirose DX10A-28S
FG	Frame grounding terminal(s)
GPS IN	GPS connector × 1 Angled, half-pitch, 20-pin Hirose DX10A-20S

17-2. General

External dimensions (W × H × D, not including protrusions)/weight*

WX-9000	348 × 82 × 220 mm/3.2 kg
AU-WX9000EPIO	348 × 41 × 220 mm/2.6 kg
WX-9016	348 × 123 × 220 mm/5.7 kg
WX-9032	348 × 164 × 220 mm/8.3 kg
WX-9048	348 × 205 × 220 mm/10.8 kg
WX-9064	348 × 246 × 220 mm/13.4 kg
WX-9080	348 × 287 × 220 mm/15.9 kg
WX-9096	348 × 328 × 220 mm/18.5 kg
WX-9112	368 × 428 × 318 mm/23.6 kg
WX-9128	368 × 469 × 318 mm/26.4 kg

*Weight does not include AC adapter.

Expansion unit connection screws	M3 × 6 (countersunk)
Rubber feet attachment screws	M3 × 8 (binding)

DC power supply input

Rated Input voltage	DC 12 V – 28 V
Input voltage range	DC 11 V – 30 V

Power consumption

16-channel model	approx. 62 W
32-channel model	approx. 104 W
48-channel model	approx. 146 W
64-channel model	approx. 188 W
80-channel model	approx. 230 W
96-channel model	approx. 272 W
112-channel model	approx. 314 W
128-channel model	approx. 356 W

Included AC adapter

Rated Input voltage	AC 100 V – 240 V
Input voltage range	AC 90 V – 264 V
Input power supply frequency	50/60 ±3 Hz
Rated output voltage	16 V
Rated output current	6.5 A
External dimensions (W × H × D)	68 × 35 × 153 mm
Weight	650 g or less

Operating conditions

Operating temperature/humidity range	0 to 40°C/10 to 80% (no condensation)
Storage temperature/humidity range	–20 to 60°C/5 to 90% (no condensation)
Operating air pressure range	860–1060 hPa
Vibration resistance	MIL-STD-810H Figure 514.8C-2

- Confirm the operating conditions of each type of recording media.

Note

Cooling fan life	20,000 hours (fans alone at 25°C)

17-3. Included accessories

Microphone	1 (for voice memos)
Earphone	1
SSD case	1
Connection reference sheet	1 (printed edition)
AC adapters	
WX-9016	1
WX-9032	1
WX-9048	2
WX-9064	2
WX-9080	3
WX-9096	3
WX-9112	4
WX-9128	4
AC adapter power cords	same as number of AC adapters

17-4. Synchronized recording

Number of synchronized recording units	2 maximum

17-5. Expansion units

Analog input

Input signal type	DC, AC, IEPE
Number of input channels	16
Input connector	BNC (Z=50Ω type)
Input format	Unbalanced
Input impedance	1 MΩ
Input range	±0.1 V, ±0.2 V, ±0.5 V, ±1 V, ±2 V, ±5 V, ±10 V, ±20 V, ±50 V
HPF	OFF, 10 Hz, 20 Hz (-18dB/oct Butterworth filter)
Weighting	FLAT, A, C (IEC TYPE 1 compliant) (Sampling frequencies of 6 kHz and less are not supported)
Absolute maximum input voltage	± 50 V (0.1/0.2/0.5/1/2/5/10V input ranges) ± 100 V (20/50V input ranges)
Input level LEDs	Lights green when input level exceeds 10% of its input range Lights red when it exceeds 115%
Input signal quantization bit depth	16/24-bit
Extended range	±127% (of rated range)
Analog-digital conversion method	ΔΣ conversion method (with simultaneous sampling and anti-aliasing filter)
Input frequency flatness characteristics (0 dB at 100 Hz)	
10 V or lower input range	±0.5 dB
20 V or higher input range	
20kHz bandwidth or lower	within ±0.5 dB
Frequency bandwidths other than above	within ±2 dB (In AC mode, 1 Hz or higher)
Input range precision	±1% or less
Phase difference between input channels (identical input range)	
Within the same expansion unit	
10 V or less input range	
20kHz bandwidth or lower	1 degree or less
Frequency bandwidths other than above	3 degrees or less
20 V or higher input range	
20kHz bandwidth or lower	2 degrees or less
Frequency bandwidths other than above	3 degrees or less
Dynamic range	135 dB or more (24-bit, 10V input range, 12.8kHz sampling frequency, input short, 3200-line FFT, 100 Hz or higher noise peak level)
S/N ratio (24-bit)	
Input range less than 1 V	
20kHz bandwidth or lower	87 dB or more
40kHz bandwidth or lower	85 dB or more
Frequency bandwidths other than above	82 dB or more
1V or 2V input range	
20kHz bandwidth or lower	104 dB or more
40kHz bandwidth or lower	102 dB or more
Frequency bandwidths other than above	97 dB or more
5V or 10V input range	
20kHz bandwidth or lower	108 dB or more
40kHz bandwidth or lower	105 dB or more
Frequency bandwidths other than above	100 dB or more
20V input range	
20kHz bandwidth or lower	99 dB or more
40kHz bandwidth or lower	97 dB or more
Frequency bandwidths other than above	91 dB or more
50V input range	
20kHz bandwidth or lower	106 dB or more
40kHz bandwidth or lower	103 dB or more
Frequency bandwidths other than above	99 dB or more
Crosstalk	−103 dB or lower (1 kHz, 1V input range, 48kHz fs)
Distortion	0.1% or less (1 kHz)
IEPE sensor power supply	DC 24 V/4 mA, 0.5 mA
IEPE sensor disconnection detection	Detection function included for each channel (Yellow LED blinks when disconnected)
TEDS	Supports TEDS Ver. 1.0.
Insulation	Every 2 channels 1 kVACrms: 60 seconds

Analog output

Number of output channels	16
Output connector	BNC (Z=50Ω type)
Output format	Unbalanced
Output impedance	50 Ω
Output range	±1 – 5 V (adjustable in 0.1V steps)
Output signal quantization bit depth	16/24-bit
Extended range	±127% (of rated range)
DA conversion method	ΔΣ conversion method
Output frequency flatness characteristics	
20kHz bandwidth or lower	within ±0.5 dB
40kHz bandwidth or lower	Within +0.5 dB to −1.0 dB
Frequency bandwidths other than above	Within +0.5 dB to −2 dB
Phase difference between output channels	
Within the same expansion unit	
80kHz bandwidth or lower	1 degree or less
100kHz bandwidth	2 degrees or less
Output range precision	±1% or less
S/N ratio	
20kHz bandwidth or lower	104 dB or more
40kHz bandwidth or lower	102 dB or more
Frequency bandwidths other than above	94 dB or more
Crosstalk	−104 dB or lower (20kHz bandwidth, 1kHz signal)
Distortion	0.01% or less (1kHz signal)

ATTENTION

Monitor output is not synchronized.

17-6. Options

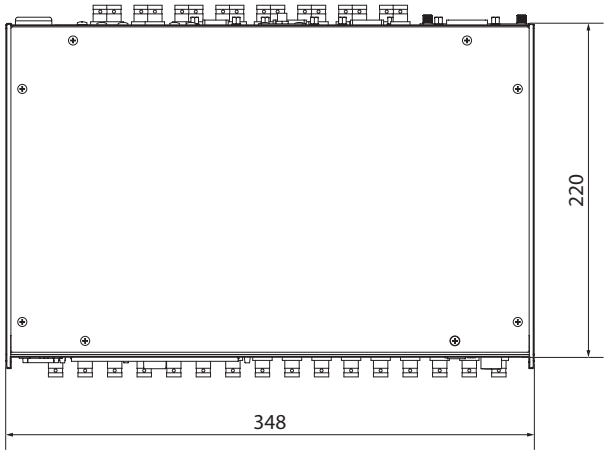
Remote control unit	ER-WXRC(9000)
GPS receiver	TZ-GR8015R
Side frames	TZ-WX9KSF series
DC power cable	CL-DRDC
Synchronization cable	KIT, SYNCHRO CABLE WX 1M
Cable connection adapter (for recording unit)	TZ-WX9KCCA(M)
Cable connection adapter (for expansion unit)	TZ-WX9KCCA(E)
Input/output connection cable	
SSD case	TZ-WX9KSSDCASE
SD adapter	TZ-WX9KSDADP

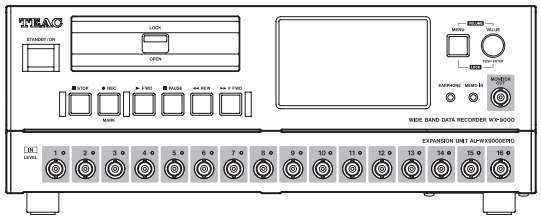
- In order to improve products, specifications and appearance could be changed at any time without warning.
- Illustrations in this document might differ in part from actual products.

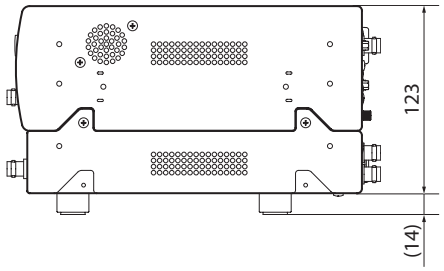
18. Exterior drawings

By adding more AU-WX9000EPIO expansion units, the numbers of input/output channels can be increased 16 at a time. Some combination examples follow.

WX-9016

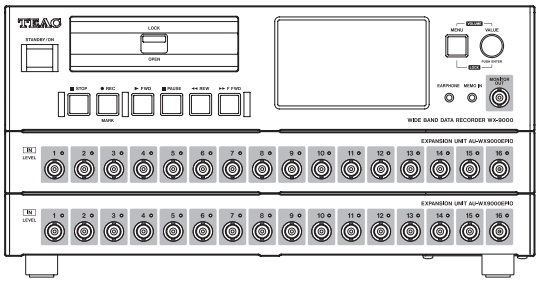


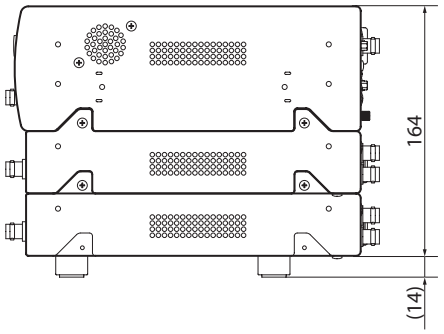




Dimensions in millimeters (mm)

WX-9032

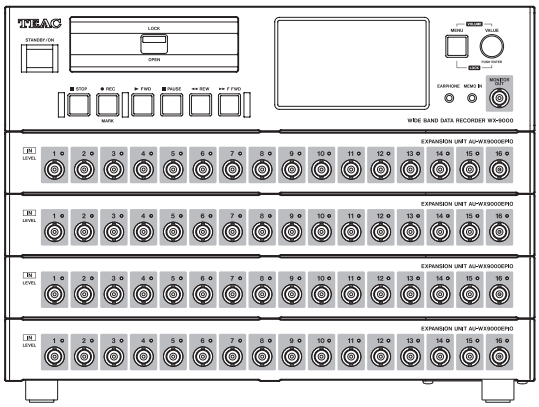


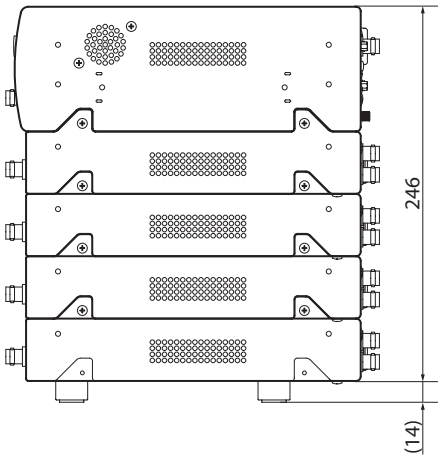


Dimensions in millimeters (mm)

18.Exterior drawings

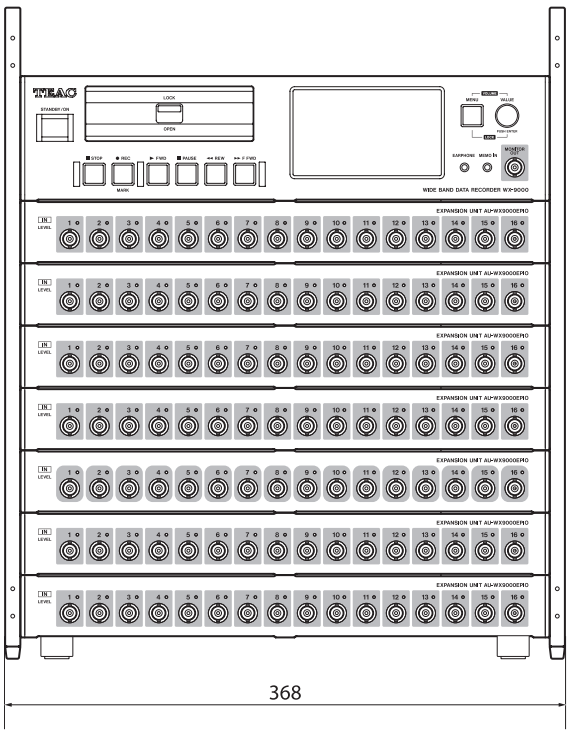
WX-9064

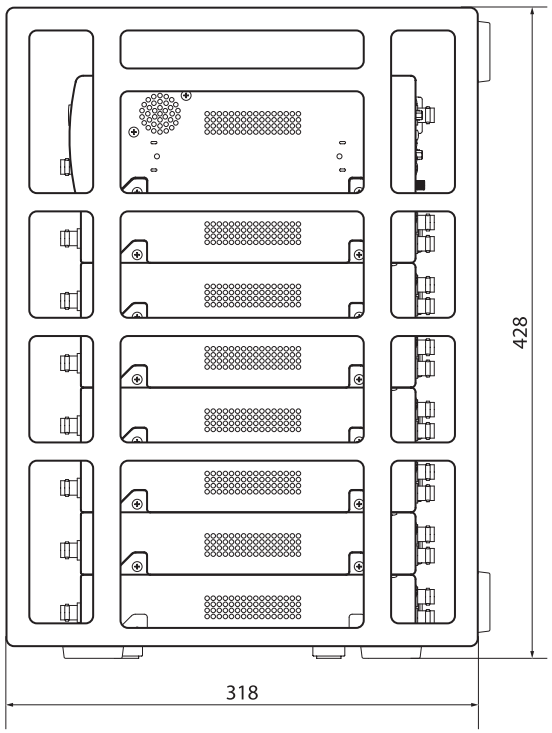




Dimensions in millimeters (mm)

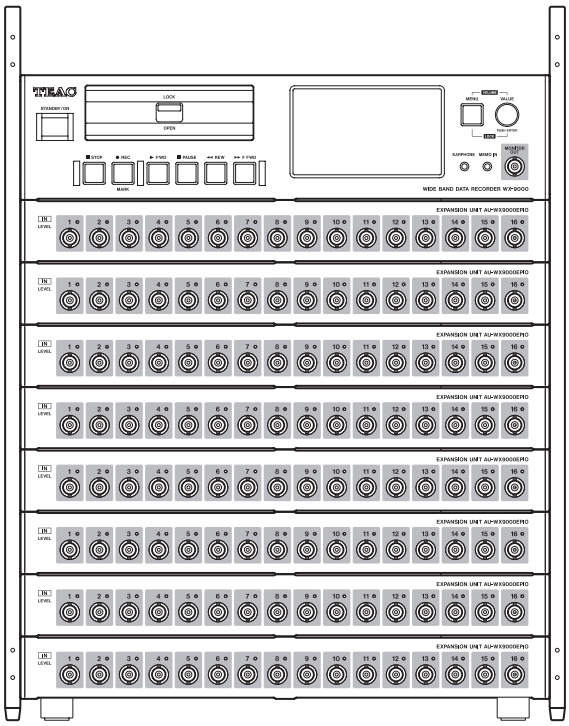
WX-9112

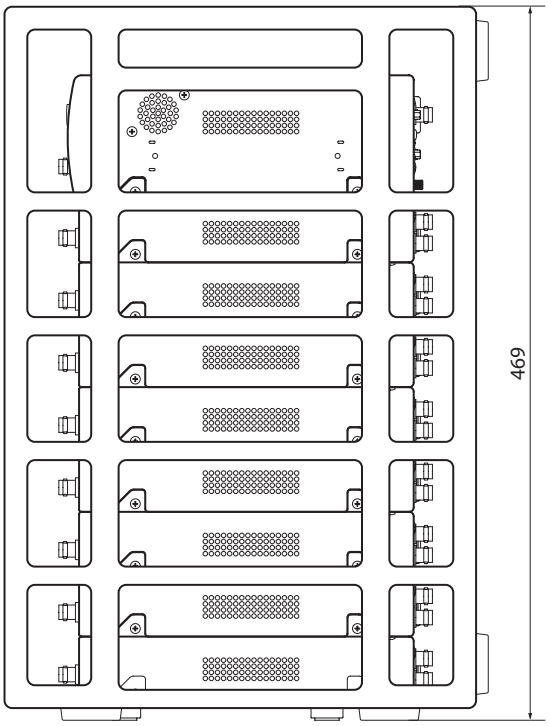




Dimensions in millimeters (mm)

WX-9128





Dimensions in millimeters (mm)

19. Troubleshooting

If any of these problems should occur, please check the following before requesting service.

Problem	Possible causes and responses
Power will not turn on	Are the AC adapters connected correctly?
	Is the DC power supply voltage too low?
Hardware buttons do not function	Is the panel locked? If so, unlock it.
The WX-9000 system is not recognized by WX9K Navi	Are the LAN cables connected correctly?
	Are the IP address, subnet mask and other item set correctly?
	Is it blocked by a computer firewall?
	Try turning the WX-9000 off and on again, and then restart WX9K Navi.
Recording media is not recognized properly	Has the media been formatted by the WX-9000? If not, use the WX-9000 to format it.
	Are you using media that has been confirmed to work with the WX-9000?
	Is the drive cover open? After installing media, close the drive cover. Try turning the WX-9000 off and on again.
Recorded files cannot be played	If the recording of a file was not completed properly because of a power interruption, for example, that file cannot be played back by this system. Use a TAFFmat viewer on a computer to show it.
	Recorded files with IDs higher than 999 cannot be played. Use WX9K Navi to play such files.
Cannot set event marks.	When synchronization is set, event marks can only be set on the leader system.

If you are still unable to fix the problems after checking the above, please contact us.
For contact information, see the last page.

Built-in battery

This system has a battery to run the built-in clock.
If this battery dies, the system will become unable to retain accurate time, which will affect recording data.
We recommend replacing it before it dies.
Please contact us when changing the battery becomes necessary.

20. Warranty explanation

- The warranty period for this device is one year from the date of purchase.

- Be aware that repairs will require payment in the following cases even during the warranty period.
  1) Malfunction or damage due to misuse
  2) Malfunction or damage caused by modifications or repairs conducted by any party other than our company or a service person designated by our company
  3) Malfunction or damage caused by dropping, transportation or similar handling after product delivery
  4) Malfunction or damage caused by fire, earthquake, water, lightning or other natural disaster
  5) Malfunction or damage caused by external factors, including power supplies and equipment environmental conditions, that deviate from the operation requirements of this product
  6) Malfunction or damage if the product was not purchased from our company or an agent designated by our company

- We offer paid service after the conclusion of the warranty period. For details, please contact the retailer where you purchased the unit or a contact on the back cover of this manual.

- Be aware that our company will bear no responsibility for any secondary damages resulting from the operation of this device or related to data.

- Be aware that our company will bear no responsibility if data recorded by this device is deleted as a result of misoperation or unexpected incident, for example.

- Information is given about products in this manual only for the purpose of example and does not indicate any guarantees against infringements of third-party intellectual property rights and other rights related to them. TEAC Corporation will bear no responsibility for infringements on third-party intellectual property rights or their occurrence because of the use of these products.

TEAC

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TEAC SALES & TRADING (ShenZhen) CO., LTD.	Room 817, Xinian Center A, Tairan Nine Road West, Shennan Road, Futian District, Shenzhen, Guangdong Province 518040, China

Contact us
https://datarecorder.jp/en/contact.html

Download the Instructions for Use and request WX9K Navi from the following website.

https://datarecorder.jp/en/support/download/

- Please be aware that addresses and URL could change without warning.

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