D01190210Q

TEAC

WX-7000

WIDE BAND DATA RECORDER
Instructions for Use

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Thank you for purchasing the WX-7000 WIDE BAND DATA RECORDER ("WX-7000"). 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.

RDX and rdx are trademarks or registered trademarks of Tandberg Data Holdings Sarl in the United States and other countries.

SDHC Logo is a trademark of SD-3C, LLC.

TEAC and TAFFmat are trademarks of TEAC Corporation, registered in the U.S. and other countries.

Other company names, product names and logos are the trademarks or registered trademarks of their respective owners.

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 "18-4. Included accessories" on page 83.

1-3. Overview

Wideband, multichannel recording for long durations continues to increase in importance 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-7000 series of wideband data recorders fulfills these needs.
These systems use RDX cartridges and SDHC cards as recording media, and they can record 16-bit/16-channel or 24-bit/8-channel data in frequency bands up to DC 80 kHz on RDX cartridges.
Systems with up to 128 channels can be provided using 16-channel expansion units. Furthermore, by synchronizing two recording units, up to 256 channels of measurements can be recorded simultaneously.
The quantization 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/16-channel or 24-bit/8-channel data in frequency bands up to DC 80 kHz
- Wide dynamic range realized using 24-bit analog to digital conversion
- Two recording media types: RDX cartridges and SDHC cards
  RDX cartridges with hard disk drives (HDD) have high capacities that provide long continuous recording times.
  RDX cartridges with solid-state drives (SSD) have greater resistance to vibrations and shocks.
  SDHC cards provide increased media accessibility.
- One system that combines one WX-7000 with eight AU-WXEPIO expansion units can record up to 128 channels
- Two systems can be synchronized, allowing up to 256 channels of recording
- High-speed data transmission with computers is possible using Gigabit Ethernet
- WX Navi waveform display software included
- TAFFmat data format used
- Easy-to-read 320x240 3.5-inch TFT color display
- Graphical interface designs enables intuitive operation
- Voice memo recording and playback
- Stopping and starting recording and playback possible using external contact inputs
- Additional convenient functions include trigger recording and audio playback of recorded voice memos
- Synchronized AQ-VU video recording with 4-channel camera possible
- Files are saved regularly, preventing data loss due to unexpected power interruptions
- Power outage signals from an uninterruptible power supply (UPS) can trigger the system to conduct recording conclusion procedures to prevent data loss
- Panel lock function prevents accidental operation
- Analog input circuit offset and gain correction
- DC input and ICP sensor input can be used for analog input
- Analog input level monitoring LEDs
- Power supplied to ICP sensors can be switched between DC 24 V and DC 28 V for all 16 channels at once.
- Constant current to each ICP sensor channel can be switched between 0.5 mA and 4 mA.
- Signal line interruption detection for each channel when using ICP input sensors
- Reads ICP sensor TEDS information
- Analog monitoring output possible during recording
- Detection of analog filter input saturation due to excessive input

1-5. System composition

This system is composed of a WX-7000 recording unit and one or more AU-WXEPIO expansion units.

Recording unit: WX-7000

Expansion unit: AU-WXEPIO

By adding more AU-WXEPIO expansion units, you can increase the number of input and output channels.
We offer products with 1, 2, 4, 6 and 8 AU-WXEPIO expansion units.

WX-7016 (16 input and output channels)

WX-7032 (32 input and output channels)

WX-7064 (64 input and output channels)

WX-7096 (96 input and output channels)

WX-7128 (128 input and output channels)

- When multiple AU-WXEPIO expansion units are connected, channel numbering starts with channel 1 at the top left and ends with the last channel (32, 64, 96 or 128) at the bottom right.

1-6. Recording media

Open the drive cover of the WX-7000 unit to access the RDX docking station and SDHC card slot.

1-6-1. RDX cartridge

One internal RDX 3.5-inch drive (HDD or SSD)

Recording capacity
HDD: 500 GB – 2 TB
SSD: 64 GB – 512 GB

1-6-2. SDHC card

One SDHC card slot

Compatible media
SDHC cards (SDXC cards not supported)

Recording capacity
4 GB – 32 GB

Recommended speed class
Class 10

1-6-3. Media verified for use

This unit uses RDX cartridges and SDHC cards for recording and playback.
We provide a list of RDX cartridges and SDHC cards that we have verified the operation of with this unit on our Information Products Division data recorders website.
https://datarecorder.jp/en/
You can also contact the sales office of our Information Products Division.

1-7. TAFFmat format

1-7-1. Type of files

The WX-7000 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 (binary format with a "dat" file extension)
Header file: Contains recording conditions and other information (text (ASCII) format with an "hdr" file extension)

- In addition, when voice memos are recorded, their files with "wav" extensions are also saved.

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 to the media, the next ID number is used.
To specify a file name, choose FILE and RECORDING FILE, and then specify the file name in FILE. For the file name, use up to 5 half-width alphanumeric characters.
The system attaches a 3-digit ID number (starting from 001) to these 5 characters to make a total of 8 characters. If the designated character is 4 or less, the portion between the characters and the 3 digits will be filled with "0", and the number of characters in the file name will become 8 in total.

1-7-3. Directory structure of media

The directory structure of each medium is as follows.

[1] WXDAT

This directory is made automatically when the medium is formatted. When the medium is inserted in an WX-7000, this directory is made automatically if it does not already exist.

[2] TEST0001

Name of the directory entered in DIRECTORY, which is in the dialog box displayed by choosing FILE and then RECORDING FILE.

[3] Aaaaa001.dat
Aaaaa001.hdr
Aaaaa001.wav

Data, header and voice memo files (if voice memos were recorded) created for a single ID

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 6 kHz sampling frequency

1-7-5. 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 11 for information about SLOPE and Y_OFFSET.

1-7-6. 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 TEST0001
VERSION 1
SERIES CH1_WX7K_PAAMP,CH2_WX7K_PAAMP,CH3_WX7K_PAAMP,CH4_WX7K_PAAMP,CH5_WX7K_PAAMP,CH6_WX7K_PAAMP,CH7_WX7K_
PAAMP,CH8_WX7K_PAAMP
DATE 01-01-2013
TIME 12:00:00.00
RATE 192000
VERT_UNITS V,V,V,V,V,V,V,V
HORZ_UNITS Sec
COMMENT WX-7000
NUM_SERIES 8
STORAGE_MODE INTERLACED
FILE_TYPE INTEGER
SLOPE 8.000000e-005,8.000000e-005,8.000000e-005,8.000000e-005,8.000000e-005, 8.000000e-005,8.000000e-005,8.000000e-005
X_OFFSET -1.0
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
NUM_SAMPS 11904000
DATA
DEVICE WX-7000
CH1_1 WX7K_PAAMP,RANGE=2V,AC,4mA,FLAT,OFF,24V
CH2_2 WX7K_PAAMP,RANGE=2V,AC,4mA,FLAT,OFF,24V
CH3_3 WX7K_PAAMP,RANGE=2V,AC,4mA,FLAT,OFF,24V
CH4_4 WX7K_PAAMP,RANGE=2V,DC,OFF,FLAT,OFF
CH5_5 WX7K_PAAMP,RANGE=2V,DC,OFF,FLAT,OFF
CH6_6 WX7K_PAAMP,RANGE=2V,DC,OFF,FLAT,OFF
CH7_7 WX7K_PAAMP,RANGE=2V,DC,OFF,FLAT,OFF
CH8_8 WX7K_PAAMP,RANGE=2V,DC,OFF,FLAT,OFF
REC_MODE RDX
END_TIME 01-01-2013 12:01:00
START_TRIGGER COMMAND,PRE
STOP_CONDITION COMMAND,POST
START_PRE_COUNT 192000
STOP_POST_COUNT 192000
MARK 4032000,5952000,7872000
VOICE_MEMO 8BITS,327680
WX-7000_VERSION MAIN_FW:V1.00,MAIN_FPGA:V1.00,SUB_FW: :V1.00,LCD_FW:V1.00,AMP_DSP0:V 1.00,AMP_FPGA0:V 1.00
```

Explanations of header file

DATASET	File name
VERSION	1 (This is a fixed value.)
SERIES	Number of the channel used for recording. The channel name is after the underscore.
DATE	Date when recording started (month-day-year)
TIME	Time when recording started (hour: minute: second)
RATE	Sampling frequency (Unit: Hz)
VERT_UNITS	Physical/engineering units of each channel
HORZ_UNITS	Time axis units (Sec: This is a fixed value)
COMMENT	Comment entered using FILE and RECORDING FILE.
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/engineering units
X_OFFSET	Location of the beginning data on the time axis. Usually is 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/engineering units.
NUM_SAMPS	Number of data items recorded per channel
DATA	The data that follows this entry is specific to this unit, and it might differ from the formats of other models.
DEVICE	WX-7000
CH1_	The following information is written after the underscore: channel number, channel name, amplifier setting(range, coupling, sensor current, weighting, HPF, sensor voltage)
REC_MODE	Recording destination device (RDX, SD, PC)
END_TIME	Recording end time
START_TRIGGER	Recording start conditions: COMMAND: Interface command LEVEL: Level trigger DATE: When Repeat Count is 1 in the interval action TIMER: When Repeat Count is 2 or more in the interval action EXT: External Trigger TIME_OUT: Time out PRE: Added for a pre-trigger
STOP_CONDITION	Recording stop conditions: COMMAND: Interface command LEVEL: Level trigger TIMER: Specified recording time EXT: External trigger MEDIA_FULL: The media is full. 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 number of bits per sample for voice-memo data. Data size (bytes)
WX-7000_VERSION	Firmware and FPGA version of the WX-7000 main, Firmware version of the WX-7000 sub, Firmware version of the LCD, DSP and FPGA version of the WX-7000 amplifier

- In media recording, the WX-7000 attaches the following information after DEVICE when the data are automatically divided into segments of maximum size(4GB).
  DIVIDED n The n th file
- In synchronization recording, the WX-7000 attaches the following information after DEVICE.
  SYNC MASTER In the case of a master unit in synchronization recording
  (SYNC SLAVE) In the case of a slave unit in synchronization recording

2. IMPORTANT SAFETY INSTRUCTIONS

Model for USA

Declaration of Conformity

Model number: WX-7000

Trade name: TEAC

Responsible party: TEAC AMERICA, INC.

Address: 10410 Pioneer Blvd. Unit #1, Santa Fe Springs, California 90670, U.S.A.

Telephone number: +1-323-726-0303

This device complies with Part.15 of FCC Rules. Operation is subject to the following two conditions:

1) This device may not cause harmful interference
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

Innovation, Science and Economic Development Canada's Compliance Statement:

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

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

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.

Disposal of electrical and electronic equipment

(a) All electrical/electronic equipment 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 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 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 must be collected and disposed of separately from household waste.

(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.

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 versursachen; in diesem Fall kann vom Betrieber verlang werden, angemessene Maßnahmen durchzuführen und dafür aufzukommen.

Model for UK

This product complies with the applicable UK regulations.

3-1. Powering the unit

One included AC adaptor can supply power to both the WX-7000 recording unit and two AU-WXEPIO expansion units.
AU-WXEPIO expansion units that are not connected to an AC adaptor receive power by connection cables.
Connect AC adaptors and connection cables as shown in the following illustrations.

CAUTION

- Do not supply power to AC adaptors or DC INs until after securely connecting all connection cables between units.
- Before connecting or disconnecting connection cables, turn off the power to the AC adaptors and DC INs.
- Connect the EXPANSION OUT connector of the unit above with the EXPANSION IN connector of the unit below it using a connection cable.
- Place the AC adaptor units away from the AU-WXEPIO expansion units.
- When using within Japan, use the included AC cord that has a PSE mark on the plug.
- When using in the North American region, use the included AC cord that has a CSA mark on the plug.

3-1-1. WX-7016

Connect the included AC adaptor to the DC IN on the WX-7000.

3-1-2. WX-7032

Connect the included AC adaptor to the DC IN on the WX-7000.

3-1-3. WX-7064

Connect one included AC adaptor to the DC IN on the WX-7000 and the second included AC adaptor to the DC IN on the third AU-WXEPIO unit from the top.

3-1-4. WX-7096

Connect one included AC adapter to the DC IN on the WX-7000, the second included AC adapter to the DC IN on the 3rd AU-WXEPIO unit from the top and the third adaptor to the 5th unit.

3-1-5. WX-7128

Connect one included AC adaptor to the DC IN on the WX-7000, the second adaptor to the DC IN on the 3rd AU-WXEPIO unit from the top, the third adaptor to the 5th unit and the fourth adaptor to the 7th unit.

3-2. Connecting an uninteruptible power supply (UPS)

Even if a power outage occurs while a WX-7000 is recording, data except for that recorded just before the outage will be retained in most cases.
This is because the unit 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 for 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 contact signal to the WX-7000 so that it will conduct recording completion procedures.

Power the WX-7000 through its AC adaptor from a power output from the UPS.

Connect the UPS power outage contact signal output to the WX-7000 UPS SIGNAL IN.

After confirming that the connection cables are securely connected between all units, turn on the power for the UPS and then the WX-7000.

For details about this unit's UPS contact input connector, see page 27.

For details about the UPS contact signal output connector, please check with the manufacturer of the UPS as there are differences among models and manufacturers.

Operation after power outage

When a power outage signal is input during measurement recording, recording will stop and the unit will become idle.

3-3. Connecting with computers and oscilloscopes

- This unit's LAN connection supports 1000BASE-T Ethernet.
  Use a compatible hub or router and 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.

3-4. 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 WX-7000, 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.
- This system is compliant with TEDS Version 1.0.

3-5. Connecting sensors

4. Names and functions of parts

4-1. Front panels

WX-7000 recording unit

● Drive cover open

AU-WXEPIO expansion unit

A RDX indicator

This shows the RDX status as follows.

Indicator	Meaning	Explanation
Unlit	Inactive	The cartridge is not loaded properly or the docking station power is not on.
Lit green	Ready	The cartridge is ready for use.
Blinking green	In use	The cartridge is being accessed (including reading, writing and searching).
Lit yellow	Malfunctioning	A cartridge malfunction in the RDX docking station has been detected.

B Drive cover

This is the drive unit cover.
The SD card slot and RDX docking station are beneath the cover.
Always keep the drive cover closed when not loading or unloading an SDHC card or RDX cartridge. Moreover, keep it closed when data is being recorded or played back.

C Display

This 3.5-inch TFT color display has a 320 × 240 resolution and shows various 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

CANCEL button

MENU button

HOME button

SHIFT button

VALUE knob/button
When a cursor is visible, turn this to move it. Press to input a parameter and turn it to increase or decrease the parameter value. Press to use it as an ENTER button.

Up (▲) button
Down (▼) button
Left (◀) button
Right (▶) button
Use these to move the cursor.
When inputting parameters, you can also use these to increase or decrease values.

E STANDBY/ON (⏻/I) switch

Press to turn the power on or put the unit into standby.
Press the switch up to turn the power on. Press it down to put the unit into standby.

F Transport buttons

Stop (■ STOP) button
Press to stop recording and playback.

Record (● REC) button
Press when the unit is idle to make it record ready.

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

Pause (❚❚ PAUSE) button
Press when the unit is idle or playing back to make it playback ready.
Press when recording to make it record ready.

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

G Function (F1, F2, F3, F4) buttons

H VOLUME (SPEAKER) knob

Use to adjust the playback volume of voice memos.

I 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 unit.

Continued on the next page. ➡

J MEMO IN (mic input) jack

Connect the included mic here to record voice memos.
When audio input is detected, the LED lights green.

K MONITOR OUT connector

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

L SDHC card slot

Insert SDHC cards here. (See page 30.)

M RDX cartridge emergency ejection hole

Use if you cannot eject the RDX cartridge with the EJECT button. (See page 29.)

N RDX cartridge dock

Load RDX cartridges here. (See page 29.)

O RDX cartridge EJECT button and indicator

Use to eject RDX cartridges. (See page 29.)
The indicator shows the status as follows.

Indicator	Meaning	Explanation
Unlit	No power	No power is being supplied to the RDX docking station.
Lit green	Ready	Power is being supplied to the RDX docking station and it is functioning properly.
Blinking green	Ejecting	The cartridge is being ejected from the docking station.
Lit yellow	Malfunctioning	A malfunction has been detected in the RDX docking station.
Blinking yellow	Ready	The RDX media was being accessed when you pressed the EJECT button. After blinking yellow for a few seconds, it will light green.

P 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 ICP sensor, the LED lights yellow when there is no ICP current.

Q Input connectors

Use these to input measurement signals.

4-2. Side panels

R Joint bars

The WX-7000 and AU-WXEPIO units are physically connected by four joint bars. The lengths of the joint bars differ for the WX-7016, WX-7032, WX-7064, WX-7096 and WX-7128 models.

S 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.

4-3. Rear panels

WX-7000 recording unit

AU-WXEPIO expansion unit

A OPTION-1 slot

This slot is for an option card with a height of 20.5 mm.

B OPTION-2 slot

This slot is for an option card with a height of 16.5 mm.

C LAN (1000BASE-T) connector

This is for an Ethernet connection. Use to connect the system with a computer. The LED blinks when transmitting data.

- Use a category 7 LAN cable.

D EXPANSION OUT connector

Connect this to the EXPANSION IN connector of the AU-WXEPIO below it using a connection cable.

E DIGITAL CONTROL input connector

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

F SYNC IN connector

Use for synchronized recording input. Do not connect anything when not conducting synchronized recording.

G AQ-VU synchronized recording connector

Use to control starting and stopping of AQ-VU recording, as well as to synchronize the time.

H SYNC OUT connector

Use for synchronized recording output. Do not connect anything when not conducting synchronized recording.

I EXT TRIGGER IN connector

Use to input external trigger contact signals to start and stop recording.

J Cooling fans

These are exhaust fans to cool the unit. Do not block their outputs.

K FG (frame grounding) connector

Connect a grounding wire here.

L DC IN power connector

Input a voltage between 11 V and 30 V.

M UPS SIGNAL IN (contact input) connector

Connect the desired contact output of an uninteruptible power supply here. Confirm the specifications of the connector beforehand. (See page 27.)
Do not connect anything if you are not using this feature.

N EXPANSION OUT connector

Connect this to the EXPANSION IN connector of the AU-WXEPIO below it using a connection cable.

O EXPANSION IN connector

Connect this to the EXPANSION OUT connector of the WX-7000 or AU-WXEPIO unit above it using a connection cable.

P FG (frame grounding) connector

Connect a grounding wire here.

Q OUT connectors

Use to output measurement and playback signals.

R Cooling fan

This is an exhaust fan to cool the unit. Do not block its output.

S DC IN power connector

Input a voltage between 11 V and 30 V. Not every expansion unit requires direct power input. (See pages 13 - 14.)

5. Connector specifications

5-1. DIGITAL CONTROL input connector

Function

Use to control recording and playback with contact signals and to connect an optional remote control unit.

Contact input

REC_FWD, REC, FWD, STOP, PAUSE, event, panel lock, internal clock calibration

Status output

REC_FWD, REC, FWD, STOP, PAUSE, event, 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, 8 mA maximum sync current

Connector

Angled, half-pitch, 50-pin (Hirose DX10A-50S)

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	Signal	Function
1	GND	Ground
2	RESERVED	Reserved
3	RESERVED	Reserved
4	GND	Ground
5	RESERVED	Reserved
6	RESERVED	Reserved
7	GND	Ground
8	GND	Ground
9	RESERVED	Reserved
10	RESERVED	Reserved
11	RESERVED	Reserved
12	RESERVED	Reserved
13	GND	Ground
14	GND	Ground
15	RTCADJIN	Internal clock adjustment input
16	RECFWDIN	REC FWD input
17	STOPIN	STOP input
18	RECIN	REC input
19	FWDIN	FWD input
20	PAUSEIN	PAUSE input
21	EVENTIN	EVENT input
22	REWINDIN	REWIND input
23	FASTFWDIN	FAST FWD input
24	PLOCKIN	Panel lock input
25	GND	Ground
26	GND	Ground
27	RESERVED	Reserved
28	RESERVED	Reserved
29	GND	Ground
30	RESERVED	Reserved
31	RESERVED	Reserved
32	GND	Ground
33	GND	Ground
34	RESERVED	Reserved
35	RESERVED	Reserved
36	RESERVED	Reserved
37	RESERVED	Reserved
38	GND	Ground
39	GND	Ground
40	RESERVED	Reserved
41	REC FWDSTS	REC FWD output
42	STOPSTS	STOP output
43	RECSTS	REC output
44	FWDSTS	FWD output
45	PAUSESTS	PAUSE output
46	EVENTSTS	Event output
47	REWINDSTS	REWIND output
48	FASTFWDSTS	FAST FWD output
49	PLOCKSTS	Panel lock output
50	GND	Ground

5-2. SYNC IN and SYNC OUT connectors

Function

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

Clock input and output

FS, MSYNC

Control input and output

RECTRG, SYNCTRG, COM

Status input and output

STS, SYNCERR, SYNCBUSY

Input and output circuit format

Serial communication

RS-422 (MAX4385 or equivalent)

Connector

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

Pin assignments

Pin	Signal	Function
1	GND	Power supply 0 V
2	SYNCFS+	FS clock +
3	SYNCFS-	FS clock -
4	GND	Power supply 0 V
5	MSYNC+	Master clock +
6	MSYNC-	Master clock -
7	GND	Power supply 0 V
8	COM+	Command signal +
9	COM-	Command signal -
10	GND	Power supply 0 V
11	STS+	Status signal +
12	STS-	Status signal -
13	GND	Power supply 0 V
14	RESERVED	Reserved
15	GND	Power supply 0 V
16	SYNCTRG+	SYNC trigger +
17	SYNCTRG-	SYNC trigger -
18	GND	Power supply 0 V
19	RECTRG+	Recording trigger +
20	RECTRG-	Recording trigger -
21	GND	Power supply 0 V
22	SYNCBUSY+	SYNC busy +
23	SYNCBUSY-	SYNC busy -
21	GND	Power supply 0 V
25	SYNCERR+	SYNC error +
26	SYNCERR-	SYNC error -
27	GND	Power supply 0 V
28	RESERVED	Reserved

5-3. AQ-VU synchronized recording connector

Function

Use to control starting and stopping of AQ-VU recording, as well as to synchronize the time.

Input

ALARM IN

Control output

CLOCK, START STOP, EVENT TRG

Serial output

S-IF OUT 9200 bps

Input and output circuit format

Input format

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

Output format

Open drain (pull-up to 5 V at 1 kΩ)
Maximum sync current: 8 mA

Connector

9-pin D-sub rectangular connector (Hirose RDED-9P-LNA (4-40))

Pin assignments

Pin	Signal	Function
1	EVENT TRG OUT	Event trigger output
2	ALARM IN	Alarm signal input
3	START STOP OUT	Start and stop control output
4	GND	Ground
5	CLOCK OUT	Sampling clock output
6	S-IF IN	Reserved
7	GND	Ground
8	S-IF OUT	Internal clock serial output
9	RESERVED	

5-4. EXT TRIGGER IN connector

Function

Use to input external trigger contact signals to start and stop recording.

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 circuit format

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

Connector

BNC connector

Internal circuit

Recording starts when the input through the EXT TRIGGER IN connector becomes 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.

5-5. DC IN power connector

Function

Input a voltage between 11 V and 30 V.

Connector

XLR (Neutrik NC4MPR-HD)

Pin assignments

Pin	Signal	Function
1	-	0V DC power supply
2	NC	No connection
3	RESERVED	Reserved
4	+	11 V–30 V DC power supply

5-6. UPS SIGNAL IN contact input connector

Function

If a power outage occurs when using this system with a UPS power supply and a UPS power outage detection contact signal is input here, recording closing procedures will be conducted to stop recording .

Input circuit format

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

Connector

Round connector (Hirose HR10-7R-4S)

Pin assignments

Pin	Signal	Function
1	UPS SIGNAL IN	Power outage signal input
2	GND	Ground
3	NC	---
4	NC	---

Internal circuit

If a short-circuit occurs between pins 1 and 2 of the UPS SIGNAL IN connector, recording completion procedures will start. Short-circuits occur due to contact and non-contact (transistor or TTL open collector).

Do not increase voltage from outside.

6. Basic operation

6-1. RDX cartridges

6-1-1. Handling

RDX cartridges are designed to be tough, but you should take care to avoid allowing them to be dropped.
In order to assure the accuracy and security of data, please observe the following precautions.

- When purchased new, RDX cartridges are NTFS formatted. Format cartridges with the WX-7000 before using them with this system.
- When not using a cartridge store it in a protective case.
- Do not stack RDX cartridges.
- Avoid dusty or humid environments.
- Avoid direct sunlight, high and extremely cold temperatures, as well as extreme temperature changes.
- Do not force cartridges into the docking station.
  If you are having trouble inserting the cartridge, confirm that you are inserting it with the correct orientation, including the alignment of its keyed corner.
- Read the RDX cartridge operation manuals.
- Remove the RDX cartridge before transportation.

6-1-2. Protection switch

Writing not possible　　Writing possible

When a protection switch is set to 🔒, writing to the cartridge is prevented.
When a protection switch is set to 🔓, writing to the cartridge is possible.

6-1-3. Loading and ejecting

The front of the docking station has an opening for RDX cartridge insertion.
This opening has a protective door. To its bottom right is the EJECT button that also functions as a power supply indicator.
Never remove an RDX cartridge when the unit is in use (including when recording, playing back or writing data). Removing a cartridge could cause recording to fail, recorded data to be lost and loud noises from the monitoring output, which could damage equipment.

Loading RDX cartridges

Insert an RDX cartridge into the docking station with the correct orientation. Its keyed corner should be on the top left and its write-protection switch should be at the back right.
Push the RDX cartridge in gently until it makes a clicking sound and locks into place.

Ejecting RDX cartridges

Press the EJECT button.
After the RDX cartridge is ejected from the docking station, pull it out directly.

If an RDX cartridge cannot be ejected

If an RDX cartridge cannot be ejected, stop the power supply to the unit and confirm that the EJECT button indicator is unlit.
If the LCD display is unlit but the RDX docking station EJECT button is lit green, stop the power supply to the DC-IN or the AC adaptor.
After confirming that the EJECT button indicator is unlit, restart the power supply to the unit.
After the Home Screen appears, press the EJECT button to remove the RDX cartridge.

- If an RDX cartridge is reinserted while it is being ejected, for example, the media might not be recognized. If this occurs, restart the unit.

6-1-4. Emergency ejection of RDX cartridges

At the top center on the front panel of the docking station is an emergency ejection hole.
If you are still unable to eject an RDX cartridge after following the procedures in "If an RDX cartridge cannot be ejected" above, use the following procedures.

1 Stop the power supply to the unit.

2 Straighten a large paperclip and insert one end into the emergency ejection hole.

Push the paperclip straight in with a small amount of force to eject the cartridge.

3 After the RDX cartridge is ejected from the docking station, pull it directly out.

CAUTION

Do not use the emergency ejection hole to eject a cartridge when the cartridge indicator is blinking green.

6-2. SDHC cards

6-2-1. Handling SDHC cards

Avoid using SD cards that have adapters for microSD cards or miniSD cards.

6-2-2. Insertion and removal

SDHC card insertion

Insert SDHC cards when the unit is in standby mode (power off).

1 Open the drive cover.

2 Push the SDHC card all the way in.

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

3 Close the drive cover.

Removing SDHC cards

Never remove an SDHC card when the unit 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 SDHC card in gently.

The SDHC card will come out part way.

3 Pull the SDHC card out by hand.

4 Close the drive cover.

SDHC card write-protection switches

SDHC cards have write-protection switches.

- To use an SDHC 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-7000) and the expansion units (AU-WXEPIO), as well as the AC adaptor connections and turn the STANDBY/ON switch to ON.
When the Home Screen appears on the display the system is ready for use.

6-4. Stopping power to the system

Before turning the power off for the recording unit (WX-7000), eject the RDX cartridge and SDHC card. If the power is turned off while data is being written, data recorded on that medium might become unreadable.
Stop powering the system before moving it.

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 indicator

This icon shows the current status of the recording unit.
The meanings of the icons are as follows.

■	Stopped
► II	Playback ready
►	Playing back
● II	Record ready
●	Recording

b ID number

This shows the ID number of the current directory.
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 and press and turn the VALUE knob to search by ID.

c Counter (COUNT)

This shows the day, hour, minute and second (ddd, HH:MM:SS).
The time that appears depends on the status of the recording unit.

When recording, this shows the elapsed time since recording started.

When playing back or ready for playback, this shows the elapsed time from the beginning of the file.
When ready for playback, you can select the COUNT item on the LCD and press and turn the VALUE knob to search by time.

d Data display

These bar meters show the levels of the channels.
Press the F1 (Peak Clear) button to reset the peak hold display.

e Recording file information

FILE (name of file being recorded)
DIR (name of directory where file is being recorded)
The information shown changes according to the status of the recording unit.

During playback and when ready for playback, this shows the name of the file that is being played or is ready for playback.

At all other times, this shows the name of the file that will be recorded. Only the first five 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 five characters will be shown before recording starts.

f TRG indicators

Start trigger and stop trigger settings are shown by icons. (See page 35.)

g EVENT number

This shows the EVENT number.
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 ready for playback, this shows the number of marked events from the beginning of the file to the current position.
When ready for playback, you can select the EVENT item on the LCD and press and turn the VALUE knob to search by event.

h Function assignments

This shows the current assignments of the Function (F1, F2, F3, F4) buttons.
The functions shown change according to the status of the recording unit.

- The function assignments cannot be selected.

i TIME display

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.

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

When playing back or ready for playback, this shows the time the recording was made.
At all other times, this shows the current setting of the unit.
When ready for playback, you can select the TIME item on the LCD and 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.

j Recording media information

When playing back or ready for playback, this shows the elapsed time from the beginning of the file.
At all other times, this shows the amount of space used on the current media.

k Status indicators

These indicators show when the SHIFT button is in use, the panel is locked, the system is synchronizing and when it is connected to a computer.

SHIFT button pushed

Panel locked

Synchronizing

Connected to a computer

The system cannot be operated when connected to a computer.

l Recording settings

This shows recording setting values.
You can select each of these settings and press and turn the VALUE knob to change their values.

SERIES
Sampling frequency series

SAMPLE
Sampling frequency

AD
Analog to digital conversion bit depth

REC CH
Number of recording channels

FAN
WX-7000 and AU-WXEPIO fans ON or OFF

MEMO
Voice memo function setting
When playing back, this shows playback data.

- 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 38

6-7. Data display

When recording or ready to record, bar meters show the input level of each channel.

Level bar for channel 1

The bar meters are colored by level as follows.

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

Channels shown

This shows the ID number of the connected expansion unit and the number of channels shown.

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

While pressing and holding the SHIFT button, press the up (▲) button to change to 32-channel display.

32-channel display example

While pressing and holding the SHIFT button, press the down (▼) button to change to 16-channel display.

16-channel display example

- You can also change the number of channels shown using the DISPLAY CH item on the MISC menu.

6-7-2. Peak indicators

Peak indicators begin to be shown when the unit becomes record ready, when recording starts and when playback starts.

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.
- Press the F1 (Peak Clear) button to clear peak indicators.

6-7-3. Monitored channel

The monitored channel's signal is output from the MONITOR OUT connector.

Unless the MONITOR CHANNEL item is set to OFF on the SYSTEM screen, the number of the channel currently being monitored is highlighted yellow below its bar graph.

- Select the monitored channel area and press and turn the VALUE knob to change the monitored channel.

6-8. Trigger indicators

The start and stop trigger settings are shown by icons.

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

Triggers set modes. If multiple triggers are set, they are shown in the following order of priority.

Start triggers

Priority	Trigger
1	Level
2	External
3	Timeout

Stop triggers

Priority	Trigger
1	Level
2	External
3	Time

6-9. Function buttons

The assignments of the Function (F1, F2, F3, F4) buttons are shown at the bottom of the screen.
The assignments of the Function buttons change according to the status of the recording unit as follows.

When stopped

F1 button: Peak Clear
Resets the peak hold indicators on the Home Screen.
F2 button: Input Amp
Opens the INPUT SETTING screen.
F3 button: Output Amp
Opens the OUTPUT SETTING screen.
F4 button: Display Unit
Changes the unit shown when using a system with 32 or more channels.

Pressing SHIFT while stopped

F1 button: (No indication)
No function
F2 button: TEDS
Opens the TEDS setting screen.
F3 button: Calibration
Calibrates the system.
F4 button: Display Unit
Changes the unit shown when using a model with 32 or more channels.

When recording

F1 button: Peak Clear
Resets the bar meter peak hold indicators.
F2 button: Event mark
Adds an event mark to the file being recorded.
F3 button: (No indication)
No function
F4 button: Display Unit
Changes the unit shown when using a model with 32 or more channels.

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

Continued on the next page. ➡

Pressing SHIFT while recording

F1 button: (No indication)
No function.
F2 button: Input Amp confirmation
Check the settings on the INPUT SETTING screen.
F3 button: Output Amp confirmation
Check the settings on the OUTPUT SETTING screen.
F4 button: Display Unit
Changes the unit shown when using a model with 32 or more channels.

When ready to record

F1 button: Peak Clear
Resets the bar meter peak hold indicators.
F2 button: (No indication)
No function
F3 button: (No indication)
No function
F4 button: Display Unit
Changes the unit shown when using a model with 32 or more channels.

Pressing SHIFT when ready to record

F1 button: (No indication)
No function
F2 button: Input Amp confirmation
Check settings on the INPUT SETTING screen.
F3 button: Output Amp confirmation
Check settings on the OUTPUT SETTING screen.
F4 button: Display Unit
Changes the unit shown when using a model with 32 or more channels.

When playing back

F1 button: Peak Clear
Resets the bar meter peak hold indicators.
F2 button: (No indication)
No function
F3 button: File Information
Indicate file information of playing back.
F4 button: Display Unit
Changes the unit shown when using a model with 32 or more channels.

- When playing back, the Function buttons have "F4 button: Display Unit" when pressing and holding the SHIFT button.

When ready for playback

F1 button: Peak Clear
Resets the bar meter peak hold indicators.
F2 button: (No indication)
No function
F3 button: File Information
Indicate the file information of playing back.
F4 button: Display Unit
Changes the unit shown when using a model with 32 or more channels.

- When ready for playback, the Function buttons have "F4 button: Display Unit" when pressing and holding the SHIFT button.

6-10. Recording media information

Media use/playback position

Media type and remaining capacity (%)

Media capacity use and playback position display

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

When playing back or ready for playback, 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 %.

Media remaining capacity

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

RDX SD	No media is loaded.
RDX SD	Media is loaded.
	Something is wrong with the media or the media is not supported.
RDX SD	The unit is writing to the media now.
RDX SD	The unit is reading from the media now.
09:26	This shows the amount of available recording time (hours: minutes). (In this example, the amount of available recording time is 9 hours 26 minutes.)

- Select the recording media information and press the VALUE knob to open the FILE screen.
- RDX cartridges in NTFS format (immediately after purchase, for example) cannot be used as is with this system. Format them with the WX-7000 before use.
- SDHC cards smaller than 2 GB are not supported.

6-11. Panel locking

While pressing and holding the SHIFT button, press the HOME button to lock and unlock the panel.
When the panel is locked, only the STANDBY/ON switch and the SHIFT + HOME button combination function.

If you try to use any of the other buttons or the VALUE knob when the panel is locked, an alarm will sound and a warning message will appear.

7. Changing settings from the Home Screen

You can change settings on the menu screens, but you can also change settings that are used frequently on the Home Screen.

7-1. Screen operations

1 Turn the VALUE knob to select the desired item.

You can also use the up, down, left and right (▲, ▼, ◀, ▶) buttons to select items.

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 change the setting value.

You can also use the up and down (▲, ▼) buttons to change the setting value.

4 Press the VALUE knob to confirm the setting.

The settings of the following items can be changed from the Home Screen.
For details about each parameter, see "12. Settings" on page 48

Sampling series (SERIES)
Sampling frequency (SAMPLE)
Analog-digital conversion bit depth (AD)
Number of recording channels (REC CH)
Fan activation (FAN)
Voice memo activation (MEMO)
Monitor output channel
ID number (when playing back)
EVENT number (when playing back)
COUNTER (when playing back)
TIME (when playing back)
Trigger settings (TRG)
Displayed device
Recording directory name (DIR)
Recording file name (FILE)

8-1. Order of procedures

Set the recording conditions
↓
Set the recording destination
↓
Set the triggers
↓
Make other settings
↓
Start recording
↓
Start measurement
↓
Stop measurement
↓
Stop recording

8-2. Setting recording conditions

Make settings for the sampling frequency, analog–digital conversion bit depth, number of recording channels, voice memo activation, input and output.

- Calibration is conducted automatically when this system's power is turned on.
- In order to record measurements with greater precision, however, we recommend manually calibrating the system after letting it warm-up for at least 10 minutes before beginning recording.
  SYSTEM menu → Calibration

8-3. Setting the recording destination

Set the media, directory and file name for recording.
FILE menu → RECORDING FILE
→ DEVICE
→ DIRECTORY
→ FILE
→ COMMENT

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

8-4. 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. For details about how to make settings, see page 67.

- After recording with the fan stopped, wait at least 10 minutes before recording with the fan stopped again. Use a sufficient interval time when conducting interval recording or other repeated recording in particular.

8-4-1. Trigger recording

Example of one trigger recording repetition

Recording starting conditions
- level trigger
- external trigger
- timeout trigger

Recording stopping conditions
- level trigger
- external trigger
- Recording time

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

Recording starting conditions

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

External trigger
When the input through the EXT TRIGGER IN connector becomes the L level (0.4 V or less), recording starts. If the L level has already been reached, when the system becomes record ready, recording starts immediately.

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.

- You cannot record voice memos during this time.

Recording stopping conditions

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

External trigger
When the input through the EXT TRIGGER IN connector becomes the H level (open or 2 V or more), recording stops.

Rec Time
Recording continues only for the set amount of time.

Post trigger
Even after one of the above recording stopping conditions is met, recording will continue for the set amount of time.

- When recording is stopped manually, however, the system will not record after the stop trigger.

8-4-2. 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 set time and stop after the set recording time has elapsed. Then, the system will become record ready and start recording again after the set interval. After this process has repeated to record the set number of repetitions, recording will stop.
If the number of repetitions is set to 0, interval recording will repeat until the recording media is full, or recording is stopped manually.

Start time
Recording starts at the set time.

Recording time
Recording continues for the set amount of time.

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.

Repetitions
Sets the number of repetitions. When set to 0, interval recording will repeat until the recording media is full or recording is stopped manually.
The maximum number of repetitions that can be set is 65534.

- 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 Rec Time setting.

8-5. Starting recording

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

8-6. Recording for long times

Data recorded by WX-7000 series units uses the FAT32 file system format. The maximum size of files recorded in this format is 4 GB.
When recording for a long time, new files will be created automatically every 4 GB.

- No data will be lost between these files that are generated automatically when recording for a long time.

9-1. Order of procedures

Set the playback conditions
↓
Select the playback file
↓
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 SETTING

9-3. Selecting the playback file

Select the media and file.
FILE menu → FILE OPEN

9-4. Searching with the counter

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

9-5. Searching by event

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

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.

9-8. Continuously playing back long recordings

Note about units with program versions older than MAIN FIRM V1.11

When continuously playing back long recordings that use data in multiple files, continuous playback will be interrupted for a few seconds when files change.

10. Synchronization function

10-1. Connections

- Use a synchronization cable to connect the master unit SYNC OUT to the slave unit SYNC IN.
- When not using synchronized operation, do not connect the synchronization cable.
- Always turn the master unit and slave unit off before connecting or disconnecting a synchronization cable.

10-2. Turn the units on

In order, turn on the slave unit and then the master unit. When the master unit starts up, it will automatically check the connection.

If the master unit is turned on before the slave unit, an error will occur during the connection check. In this case, conduct the connection check manually.

- The clock times of the master unit and slave unit will not be synchronized automatically. Set the time on the master unit SYNCHRO SETTING screen .

10-3. Synchronized recording settings

If you set the master unit SAMPLING FREQ, AD BIT and recording destination, they will also be set for the slave unit automatically. These cannot be changed from the slave unit.

The number of recording channels can be set* separately for the master and slave units. If recording is conducted at a transmission speed greater than that at which the slave unit can record, a Synchro Error will occur.
Confirm that the number of recording channels on the slave unit is suitable before starting recording.

- Setting triggers on the slave unit is not possible.
- The following amount of time is necessary to start synchronized recording from a stopped state.

Sampling frequency	Starting delay
192 kHz–6 kHz	About 4–7 seconds
3 kHz	About 20 seconds
1.5 kHz	About 25 seconds

- Level triggers become effective 10 seconds after the unit becomes record ready.

* When setting the number of recording channels to 96, set both the master and slave units to 96. If only one is set to 96 channels, the size of the recorded data could differ.

10-4. Synchronized playback settings

After selecting the file to play on the slave unit, select the file to play on the master unit.
If you select the file to play on the master unit first, search by ID for the file to play on the slave unit.

- It is not possible to search the slave unit using methods other than ID search. Use the master unit for other search methods.
- If the number of recording channels differs between the master and slave devices, COUNT search, EVENT search and time search functions cannot be used. If these types of searches are conducted, proper synchronized playback might not be possible.
- The following amount of time is necessary to start synchronized playback from a stopped state.

Sampling frequency	Starting delay
192 kHz – 6 kHz	About 5 seconds
3 kHz – 1.5 kHz	About 10 seconds

10-5. Confirming synchronization connections

In the master unit SYSTEM menu, select SYNCHRO SETTING, and press the VALUE knob to open the SYNCHRO SETTING screen.

Selection
Use the VALUE knob and the up, down, left and right (▲, ▼, ◀, ▶) buttons to change the selection.
Press the VALUE knob to change the setting of the selected parameter.

10-6. Checking connections

Confirm that the master and slave units are connected correctly. Select CONNECT CHECK on the master unit and press the VALUE knob.

Select OK in the dialog box, and press the VALUE knob.

If the connection is confirmed to be okay, the connection status of the master and slave units will be shown as "OK".

- The slave unit does not have a CONNECT CHECK option.

If the connection check conducted on the master unit completes successfully, the connection status of the slave unit will be shown as "OK".

10-7. Adjusting the time

Select ADJUST TIME on the master unit, and press the VALUE knob.

The time is shown on the master unit.

Press F2 (ADJUST TIME) to set the time on the slave unit to the time of the master unit (±1 second discrepancy).

10-8. Synchronization status display

When synchronization connection is in use, the synchronization status is shown on the Home Screen.

Synchronization status	Master unit	Slave unit
Synchronization not working		
Synchronization working		

When synchronized recording or playback starts, if synchronization fails, an error message appears.

11. AQ-VU synchronized recording

11-1. Connections

- Use an AQ-VU synchronization cable to connect the main unit's AQ-VU synchronized recording connector with the AQ-VU unit's SYNC IN connector.
- Do not connect an AQ-VU synchronization cable when not using synchronized operation.
- Turn off the main unit and the AQ-VU unit before connecting or disconnecting an AQ-VU synchronization cable.

11-2. Turning the units on

In order, turn the AQ-VU and the main unit on.

11-3. Settings

Set the AQ-VU for recording start and stop control, including the clocks of both units.

- Synchronized playback of the main unit and the AQ-VU is not possible.
- To synchronize the AQ-VU, set AQ-VU SYNCHRO to ON on the AQ-VU SETTING screen.
- The clocks of the main unit and the AQ-VU are not synchronized automatically. Manually synchronize them on the ADJUST TIME screen.
- To synchronize operation with the main unit, connect the AQ-VU only to the master unit. Do not connect it to a slave unit.
- AQ-VU synchronization cannot be used with 204.8kHz sampling.
- When not using the AQ-VU, set AQ-VU synchronization to OFF.
- Always turn the AQ-VU off first when turning the units off.
- If you turn the main unit off while the AQ-VU is still on, the AQ-VU might start recording temporarily.

Make the following settings on the AQ-VU.
The unit might not work properly with settings other than the ones below.

Recording Settings

VIDEO SIZE	FULL
PRE TRIG TIME	000sec
START MODE	EXT IN (CLK)
EXT IN LEVEL	LOW

Serial Communication

BAUD RATE	9600bps

- See the operation manual included with the AQ-VU for the settings of other functions.

11-4. AQ-VU synchronized connection settings

From the main unit SYSTEM menu, select AQ-VU SETTING and press the VALUE knob to open the AQ-VU SETTING screen.

Press the VALUE knob again.

Set AQ-VU SYNCHRO to ON.

11-5. Setting the time

Select ADJUST TIME and press the VALUE knob to show the time setting of the main unit.

- Before setting the time, set AQ-VU SYNCHRO to ON.

Press F2 (ADJUST TIME) to synchronize the time of the AQ-VU to that of the main unit (±1 seconds).

12. Settings

You can change settings on the menu screens, but you can also change settings that are used frequently on the Home Screen.

12-1. Basic operation

Follow these procedures to change settings using the menu screens.

1 Press the MENU button on the front panel to open the menu screens.

The title of the open menu page is shown in white.

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

→ SYSTEM → FILE → TRG → MISC

2 Turn the VALUE knob to change the selected item.

You can also use the up, down, left and right (▲, ▼, ◀, ▶) buttons to change the selected item.

3 Press the VALUE knob.

If you select an item that has its current value shown to its right, 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. For instructions, see "12-2. Selecting values from setting options" on page 49.

- For instructions on inputting characters as setting values, see "12-4. Inputting characters as setting values" on page 50.
- When special operations are required for a setting, they are explained in the section for that setting.

An arrow (➦) to the right of a menu item shows that there is a submenu screen. See "12-5. Opening submenu screens" on page 51.

4 After you finish making settings, press the HOME button on the front panel to return to the Home Screen.

- When a submenu screen is open, press the MENU button to return to the menu screen above.
  You can also press the CANCEL button to return to the menu screen above.

12-2. Selecting values from setting options

The current setting value of a menu item is shown to its right.
To set a different value for a parameter such as the sampling frequency, press the VALUE knob to show a list of options to the right of the current setting value.

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.

You can also use the up and down (▲, ▼) buttons to change the selected value.

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

- Press the CANCEL button on the front panel to cancel changing a setting.

12-3. Inputting numbers as setting values

To input a numerical value within a certain range for a parameter such as the OUTPUT SETTING, press the VALUE knob to enable changing the current value. The current selection is shown between the next lower and higher value options.

1 Turn the VALUE knob to select the desired value.

Press and then turn the VALUE knob to scroll through the options.
Turn it clockwise to increase the value.
Turn it counterclockwise to decrease the value.

You can also use the up and down (▲, ▼) buttons to increase and decrease the value.

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

- Press the CANCEL button on the front panel to cancel changing a setting.

12-4. Inputting characters as setting values

To input characters as a setting value, such as a CHANNEL NAME, press the VALUE knob to open the character input screen.
The currently set characters are shown in the window near the top of this screen.

1 Turn the VALUE knob to select the position where you want to input a character, and press the VALUE knob.

- You can also use the up, down, left and right (▲, ▼, ◀, ▶) buttons to change the selected item.
- Press the F2 (CANCEL) button to cancel changing the input characters.
- Press the F3 (a) button to input a lowercase letter. (only when it is possible to input lowercase letters).
- Press the F4 (BackSpace) button to delete the rightmost character.

2 Repeat step 1 to input all the characters. When done, press the F1 (OK) button to return to the menu screen.

- The assignments of the function buttons appear at the bottom of the screen: OK (F1), CANCEL (F2), a (F3) and BackSpace (F4). They cannot be selected. Opening submenu screens

12-5. Opening submenu screens

The menu screen has a multilevel structure. Select a menu item with an arrow (➡) to its right and press the VALUE knob to open its submenu screen. The structure of the menus is shown in "12-6. Menu screen item list" on page 51.

12-6. Menu screen item list

HOME
- Sampling series (SERIES)
- Sampling frequency (SAMPLE)
- Analog-digital conversion bit depth (AD)
- Number of recording channels (REC CH)
- Fan activation (FAN)
- Voice memo activation (MEMO)
- Monitoring output channel
- Searching by ID (ID) (during playback)
- Searching by event (EVENT) (during playback)
- Searching with the counter (COUNT) (during playback)
- Searching by time (TIME) (during playback)
- Trigger settings (TRG)
- Device selection
- Recording directory name (DIR)
- Recording file name (FILE)

MENU
- SYSTEM
- FILE
- TRG
- MISC

- SYSTEM
  - Sampling series (SAMPLING SERIES)
  - Sampling frequency (SAMPLING FREQ.)
  - Number of active channels (ACTIVE CHANNEL)
  - Analog-digital conversion bit depth (AD BIT)
  - Voice memo activation (VOICE MEMO)
  - Monitoring output channel (MONITOR CHANNEL)
  - Monitoring output range (MONITOR RANGE)
  - Input settings (INPUT SETTING)
    - 1
      - Input range (INPUT RANGE)
      - Coupling (COUPLING)
      - ICP current (SENSOR CURRENT)
      - Weighting network (MIC SET)
      - High-pass filter (HPF)
      - Channel name (CHANNEL NAME)
      - Unit (UNIT)
      - Coefficient (COEFFICIENT)
      - Offset (OFFSET)
    - 2
    - :
    - 16
    - ICP voltage (Sens Volt)
  - Output settings (OUTPUT SETTING)
    - 1
      - Output range
    - 2
    - :
    - 16
    - Output unit setting (OutUnit Set)
  - TEDS setting (TEDS)
    - TEDS loading screen
  - Calibration (CALIBRATION)
    - Manual calibration (MANUAL CAL)
    - Test signal output(TEST SIGNAL OUT)
  - AQ-VU SETTING
    - AQ-VU SYNCRO
    - ADJUST TIME
  - IRIG/GPS SETTING

- FILE
  - Recording file (RECORDING FILE)
    - Media selection (DEVICE)
    - Directory name (DIRECTORY)
    - File name (FILE)
    - Comment (COMMENT)
  - Playback file (FILE OPEN)
    - Media selection
    - Directory name
    - File name
    - File information
    - Playback mode
  - Delete files (FILE DELETE)
  - Format the media (FORMAT)

- TRG
  - Trigger mode (MODE)
    - No triggers (NONE)
    - Trigger recording (TRIGGER)
      - Starting trigger (START CONDITION)
        - Level trigger (LEVEL)
        - External trigger (EXTERNAL)
        - Time-out trigger (TIMEOUT)
      - Pre-trigger setting (PRE TRG)
      - Stopping trigger (STOP CONDITION)
        - Level trigger (LEVEL)
        - External trigger (EXTERNAL)
        - Recording time (REC TIME)
      - Post-trigger setting (POST TRG)
      - Repetitions (REPEAT COUNT)
    - Interval recording (INTERVAL)
      - Starting time (START TIME)
      - Recording time (REC TIME)
      - Interval time (INTERVAL)
      - Repetitions (REPEAT COUNT)

Continued on the next page. ➡

- MISC
  - Set data shown on Home Screen (DISPLAY DATA)
  - Set number of channels shown with bar meters (DISPLAY CH)
  - Setting saving, loading and initialization (PARAMETER)
  - Speaker output setting (SPEAKER)
  - Fan activation (FAN)
  - Sampling notation setting (NOTATION)
  - Language setting (LANGUAGE)
  - Network settings (NETWORK)
  - Date and time settings (TIMESET)
  - Display adjustment (LCD)
  - Beep settings (BEEP)
    - Button operation sound (BUTTON BEEP)
    - Warning sound (WARNING BEEP)
  - Show version information (VERSION)

12-7. Setting values list

Parameter	Default value	Setting range or options	Note
SAMPLING SERIES	192k	192k, 200k, 204.8k, 131.0k	
SAMPLING FREQ.	48k		WX-7016
	48k		WX-7032
	24k		WX-7064
	12k		WX-7096, WX-7128
ACTIVE CHANNEL (number of recording channels)	16	8, 16	WX-7016
	32	8, 16, 32	WX-7032
	64	8, 16, 32, 64	WX-7064
	96	8, 16, 32, 64, 96	WX-7096
	128	8, 16, 32, 64, 96, 128	WX-7128
AD BIT (analog-digital conversion bit depth)	24-bit	16-bit, 24-bit	
VOICE MEMO	OFF	OFF, ON	
MONITOR CHANNEL	OFF	OFF, 1–	
MONITOR RANGE	1.0V	1.0–5.0 V in 0.1V increments	
INPUT RANGE	1V	0.1, 0.2, 0.5, 1, 2, 5, 10, 20 V	All channels
COUPLING	DC	DC, AC	All channels
SENSOR CURRENT	OFF	OFF, 4mA, 0.5mA	All channels
MIC SET (weighting network)	FLAT	FLAT, A, C	All channels
HPF (high pass filter)	OFF	OFF, 10Hz, 20Hz	All channels
CHANNEL NAME	WX7K_PAAMP	20 ASCII characters maximum	All channels
UNIT	V	8 ASCII characters maximum	All channels
COEFFICIENT	1.00000000	10 ASCII characters maximum	All channels
OFFSET	0.00000000	10 ASCII characters maximum	All channels
SENSOR VOLTAGE	28V	24, 28V	All expansion units
OUTPUT RANGE	1V	1.0–5.0 V in 0.1V increments	All channels
OUTPUT UNIT	UNIT 1 → UNIT 1 UNIT 2 → UNIT 2 UNIT 3 → UNIT 3 UNIT 4 → UNIT 4 UNIT 5 → UNIT 5 UNIT 6 → UNIT 6 UNIT 7 → UNIT 7 UNIT 8 → UNIT 8		
DEVICE	RDX	RDX, SD	
DIRECTORY (name)	WX7K_DIR	8 ASCII characters maximum	
FILE (name)	WX7K_	5 ASCII characters maximum	
COMMENT	WX-7000	64 ASCII characters maximum	
MODE (trigger)	None	None, trigger, interval	
DISPLAY DATA	%	%, dB	
DISPLAY CHANNEL	16CH	16CH, 32CH	
SPEAKER	MEMO	MEMO, DATA	
FAN	ON	ON, OFF	
NOTATION (sampling)	SAMPLE	SAMPLE, BANDMAX	
LANGUAGE (言語)	日本語	日本語, ENGLISH	
IP ADDRESS	192.168.0.10		
SUBNET MASK	255.255.255.0		
GATEWAY	0.0.0.0		
DHCP	OFF	OFF, ON	
NAME	(Blank)	32 ASCII characters maximum	
TIMESET	YYYY-MM-DD	YYYY-MM-DD MM-DD-YYYY DD-MM-YYYY	
BACKLIGHT (time)	NONE	NONE, 1min, 5min, 30min	
BUTTON BEEP	OFF	OFF, ON	
WARNING BEEP	ON	OFF, ON	

13. SYSTEM menu

For details about the sampling frequency, analog-digital conversion bit depth (AD BIT) and number of recording channels (ACTIVE CHANNEL) Parameters, see "Sampling frequencies and bands" on page 77 and "Number of channels that can be recorded simultaneously" on page 77.

Selection
Use the VALUE knob and the up, down, left and right (▲, ▼, ◀, ▶) buttons to change the selection.
Press the VALUE knob to change the setting of the selected parameter.

SAMPLING SERIES
Sets the sampling frequency series.
The four series options are 192 kHz, 200 kHz, 204.8 kHz and 131.0 kHz.

SAMPLING FREQ.
Sets the sampling frequency.
The 8 available sampling frequency options correspond to the current sampling series.

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

ACTIVE CHANNEL
Sets the number of recording channels.
The options are the possible number of recording channels for the current system.

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.

MONITOR CHANNEL
Sets 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 monitor the output.

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

13-1. INPUT SETTING

From the SYSTEM menu, select the INPUT SETTING item and press the VALUE knob to open the INPUT SETTING screen.
The first channel numbers are shown with their settings beneath them.
Change the channel numbers shown with the F1 (PREV PAGE) and F4 (NEXT PAGE) buttons.

Channels shown
This shows the range of channels currently shown.

Expansion unit shown
This shows the number of the expansion unit that has the channels currently shown.

Selection
Use the VALUE knob and the left and right (◀, ▶) buttons to change the selection.
If you move further right from the selection at the right edge of the screen, the next page will open. In the same manner, moving left from the left edge will open the previous page.
Press the VALUE knob to change the setting of the selected parameter.

PREV PAGE (F1 button)
Opens the previous page.

Sens Volt (F2 button)
Opens the sensor voltage menu screen.

NEXT PAGE (F4 button)
Opens the next page.

13-1-1. Individual channel settings

On the INPUT SETTING screen, press the VALUE knob to open the setting screen for the selected channel.

- To return to the SYSTEM menu, press the MENU or CANCEL button on the front panel.
- If you want all channels to have the same settings, after confirming the set values, press the VALUE knob while pressing and holding the SHIFT button.
- 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-7000.

Selection

Use the VALUE knob and the up, down, left and right (▲, ▼, ◀, ▶) buttons to change the selection.
Press the VALUE knob to change the setting of the selected parameter.

INPUT RANGE

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

COUPLING

The options are DC and AC.
DC: Use when recording signals that include direct currents
AC: Use when recording signals of 1Hz or more

SENSOR CURRENT (PA Current)

Sets the ICP sensor current.
The options are OFF, 4mA and 0.5mA.

MIC SET (weighting network)

The options are FLAT, A and C.

HPF

The options are OFF, 10Hz and 20Hz.

CHANNEL NAME

Sets the name of the channel.

- A maximum of 20 characters can be used for a channel name.
- Only the first 10 characters of the channel name are shown on the CHANNEL SET screen.
- For instructions about inputting characters, see "12-4. Inputting characters as setting values" on page 50.

UNIT

Sets the name of the input signal unit.

- A maximum of 8 characters can be used for a unit name
- For instructions about inputting characters, see "12-4. Inputting characters as setting values" on page 50.

COEFFICIENT

Use 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 × COEFFICIENT + OFFSET

OFFSET

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

- The offset value can have a maximum of 10 digits, including digits after the decimal place.
- Only the first 8 digits of the offset value are shown on the CHANNEL SET screen.
- For instructions about inputting characters, see "12-3. Inputting numbers as setting values" on page 50.

PREV CH (F1 button)

Opens the setting screen of the previous channel.

Same Set (F2 button)

Applies the currently shown channel settings to all channels.
Press the F2 button to open a confirmation screen.

Use the VALUE knob and the left and right (◀, ▶) buttons to change the selection.
Press the VALUE knob to confirm a selection.
Select "OK" to confirm and apply the same settings to all channels.

NEXT CH (F4 button)

Opens the setting screen of the next channel.

13-1-2. Sensor voltage

On the INPUT SETTING screen, press the F2 (Sens Volt) button to open the sensor voltage screen.
This screen shows the connected expansion unit numbers and their sensor voltage settings (voltages supplied to ICP sensors).

The sensor voltage can be set individually for each AU-WXEPIO expansion unit.
The options are 24V and 28V.

- If SENSOR CURRENT is set to OFF for a channel, sensor voltage will not be output to it.

Selection
Use the VALUE knob and the up, down, left and right (▲, ▼, ◀, ▶) buttons to change the selection.
Press the VALUE knob to change the setting of the selected parameter.

OK (F1 button)
Confirm the settings and return to the INPUT SETTING screen.

13-2. OUTPUT SETTING

In the SYSTEM menu, select OUTPUT SETTING and press the VALUE knob to open the OUTPUT SETTING screen.

- To return to the SYSTEM menu, press the MENU or CANCEL button on the front panel.
- If you want all channels to have the same settings, after confirming the set values, press the VALUE knob while pressing and holding the SHIFT button.

Selection
Use the VALUE knob and the up, down, left and right (▲, ▼, ◀, ▶) buttons to change the selection.
Press the VALUE knob to change the setting of the selected parameter.

Channels shown
This shows the range of channels currently shown.

Expansion unit shown
This shows the number of the expansion unit that has the channels currently shown.

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

PREV UNIT (F1 button)
Opens the OUTPUT SETTING screen of the previous expansion unit.

OutUnit Set (F2 button)
Opens the OUTPUT UNIT screen.

NEXT UNIT (F4 button)
Opens the OUTPUT SETTING screen of the next expansion unit.

13-2-1. OUTPUT UNIT

On the OUTPUT SETTING screen, press the F2 (OutUnit Set) button to open the OUTPUT UNIT screen.
On this screen, you can set whether an expansion unit plays back data recorded by another expansion unit.

Ordinarily, data recorded with an expansion unit will be output by the same expansion unit when playing back.
By changing the OUTPUT UNIT setting, you can change the roles of expansion units when recording and when playing back.

Selection
Use the VALUE knob and the up, down, left and right (▲, ▼, ◀, ▶) buttons to change the selection.
Press the VALUE knob to change the setting of the selected parameter.

OK (F1 button)
Confirm the settings and return to the OUTPUT SETTING screen.

Differences in channel composition when recording and playing back
When recording multiple channels of data, the composition of channels might differ when recording and when playing back.
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-7016 system to play back a 128-channel file recorded using a WX-7128 system, in order to play back data recorded on channels 65-80 with the WX-7016 they must be set to channels 1-16 for analog output.

OUTPUT UNIT setting:
Unit 1 → Unit 5

Playback system

Unit 1	ch1-16

Recording system

Unit 1	ch1-16
Unit 2	ch17-32
Unit 3	ch33-48
Unit 4	ch49-64
Unit 5	ch65-80
Unit 6	ch81-96
Unit 7	ch97-112
Unit 8	ch113-128

Setting example 2
When using a WX-7032 system to play back a 128-channel file recorded using a WX-7128 system, in order to play back data recorded on channels 65-96 with the WX-7032 they must be set to channels 1-32 for analog output.

OUTPUT UNIT settings:
Unit 1 → Unit 5
Unit 2 → Unit 6

Playback system

Unit 1	ch1-16
Unit 2	ch17-32

Recording system

Unit 1	ch1-16
Unit 2	ch17-32
Unit 3	ch33-48
Unit 4	ch49-64
Unit 5	ch65-80
Unit 6	ch81-96
Unit 7	ch97-112
Unit 8	ch113-128

13-3. TEDS

This screen shows the TEDS data read when the power is turned on. The checkbox appears white in the CH column for channels for which TEDS data has been read.

Selection
Use the VALUE knob and up and down (▲, ▼) buttons to change the selection.
Press the VALUE knob to change the setting of the selected parameter.

OK (F1 button)
Confirm the settings and return to the OUTPUT SETTING screen.

CANCEL (F2 button)
Cancel setting changes.

Update (F3 button)
Load TEDS data.

All checked (F4 button)
Select all channels that have TEDS data loaded.

13-3-1. Loading TEDS data

If a TEDS sensor is connected after the power has already been turned on, the TEDS data will not appear on the screen automatically. Press the F3 button to reload TEDS data.
The following screen appears while the TEDS data is being loaded.

13-3-2. Calibrated value settings

To set calibrated value for TEDS data, select the channel and press the VALUE knob to add a check mark (✔) to the checkbox in the CH column.

- Press the F4 (All Checked) button to select all channels that have TEDS data loaded.

Press the F1 button set the selected channel's TEDS data to the "UNIT " and "SENSITIVITY " settings on the channel setting screen.

13-4. Calibration

Selection
Use the VALUE knob and up and down (▲, ▼) buttons to change the selection.
Press the VALUE knob to open a confirmation screen.

13-4-1. Manual calibration

In the SYSTEM menu, select TEST SIGNAL OUT and press the VALUE knob to open a confirmation screen.

Select the OK button and press the VALUE knob to start calibration.

13-4-2. Test signal output

Select TEST SIGNAL OUT, and push the VALUE knob.

To change the test signal output, use the VALUE knob to select the desired output.

Press Output START (F2) to output the test signal.

Press Output STOP (F2) to stop test signal output.

13-5. Synchronization settings

See "10. Synchronization function" on page 42.

13-6. AQ-VU settings

See "11. AQ-VU synchronized recording" on page 46.

14. FILE settings

Selection

Use the VALUE knob and the up, down, left and right (▲, ▼, ◀, ▶) buttons to change the selection.

Press the VALUE knob to change the setting of the selected parameter.

14-1. Media information

This screen shows information about the selected recording media.

Selected media
Recording files will be written to the media shown.
"NO MEDIA" appears if no media has been 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
The time shown in hours and minutes in parentheses is the possible recording time calculated according to the set sampling frequency, bit depth and number of recording channels.

DIR
The name of the directory where recorded data is saved.

FILE
The prefix given to the names of recording data files.

14-2. New file settings

In the FILE menu, select RECORDING FILE and press the VALUE knob to open the RECORDING FILE screen.

14-2-1. DEVICE

Select the media where recording files are saved.
The options are SD and RDX.
The selected media is shown inside a box.

- "NO MEDIA" appears if no media has been loaded.

Selection
Use the VALUE knob and the left and right (◀, ▶) buttons to change the selection.

BACK (F1 button)
Return to the RECORDING FILE screen.

14-2-2. Directory

Select the directory where recording files are saved.

Selection
Use the VALUE knob and the up, down, left and right (▲, ▼, ◀, ▶) buttons to change the selection.
Press the VALUE knob to show the files in the selected directory.

BACK (F1 button)
Return to the RECORDING FILE screen.

New DIR (F4 button)
Create a new directory.

- For instructions about inputting characters, see "12-4. Inputting characters as setting values" on page 50.

14-2-3. File name

Sets the recording file name prefix.

- For instructions about inputting characters, see "12-4. Inputting characters as setting values" on page 50.
- Lowercase letters cannot be used in file names.

14-2-4. Comment

Sets the recording file comment.

- For instructions about inputting characters, see "12-4. Inputting characters as setting values" on page 50.

14-3. Opening files

In the FILE menu, select FILE OPEN and press the VALUE knob to open the FILE OPEN screen where you can play back files.

Select the media with the file that you want to open.

- "NO MEDIA" appears if no media has been loaded.

Selection
Use the VALUE knob and left and right (◀, ▶) buttons to change the selection.
Press the VALUE knob to confirm the selection.

BACK (F1 button)
Return to the FILE OPEN screen.

14-4. Selecting directories

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

Selection
Use the VALUE knob and up and down (▲, ▼) buttons to change the selection.
Press the VALUE knob to show the files in the selected directory.
If the contents of a directory do not fit on the screen then it will be scrollable.

Current directory
The contents of this directory are shown on the screen.
The root directory is shown by default.

Total number of directories
This is the total number of directories within the current directory.

Selection number
The directory shown at the top of the list is number 1.

BACK (F1 button)
Return to the FILE OPEN screen.

14-5. Selecting files

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

Selection
Use the VALUE knob and up and down (▲, ▼) buttons to change the selection.
Press the VALUE knob to confirm selection of a file for playback and return to the Home Screen.
If the files do not fit on the screen then it will be scrollable.

Selection number
The file shown at the top of the list is number 1.

Current directory
The contents of this directory are shown on the screen.
The root directory is shown by default.

Total number of files
This is total number of files within the current directory.

BACK (F1 button)
Return to the FILE OPEN screen.

Repeat (F2 button)
Confirm repeat playback of a file and return to the Home Screen.

Continue (F3 button)
Confirm continuous playback of a file and return to the Home Screen.

File Info. (F4 button)

Show the following information for the selected file:

- Sampling frequency
- Analog–digital conversion bit depth
- Channel number
- Recording time
- Comment
- Recording starting time
- Recording ending time

Press the VALUE knob to return to the File Open screen.

14-6. Deleting files

Files can only be deleted immediately after recording.
They cannot be deleted after the media has been changed or the power has been turned off and back on again.

In the FILE menu, select FILE DELETE and press the VALUE knob.

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

14-7. Formatting media

You must use this unit to format SD cards and RDX media to use them with it. You can also format media to erase their contents.

1 In the FILE menu, select FORMAT and press the VALUE knob.

2 Turn the VALUE knob to select the media that you want to format and press the VALUE knob.

You can also use the left and right (◀, ▶) buttons to change the selection.

- "NO MEDIA" appears if no media has been loaded.

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

You can also use the left and right (◀, ▶) buttons to change the selection.

You can select CANCEL and press the VALUE knob to return to the FORMAT screen without formatting.

For details about the use of triggers for recording, see "8-4. Setting triggers" on page 39.

Selection
Press the VALUE knob to change the setting of the selected parameter.
The parameters for the selected mode appear beneath it.

15-1. MODE

Set the MODE to NONE, TRIGGER or INTERVAL.

15-1-1. NONE

Use the NONE 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.

15-1-2. TRIGGER

Selection
Use the VALUE knob and up and down (▲, ▼) buttons to change the selection.
Press the VALUE knob to change the setting of the selected parameter.

PRE TRG
Input the data quantity.

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

POST TRG
Input the data quantity.

REPEAT COUNT
Input the number of repetitions.

15-1-2-1. START CONDITION

Selection
Use the VALUE knob and up and down (▲, ▼) buttons to change the selection.
Press the VALUE knob to change the setting of the selected parameter.

LEVEL
Sets the level and UP/DOWN conditions for each channel.

EXTERNAL
The options are ON and OFF.

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

15-1-2-2. STOP CONDITION

LEVEL
Sets the level and UP/DOWN conditions for each channel.

EXTERNAL
The options are ON and OFF.

REC TIME [sec]
Sets the recording time.

15-1-2-3. LEVEL

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.
Press the F3 button to switch between AND and OR.
If LOGIC has been set to AND, monitor a channel on the same unit.
Input a square wave as the trigger signal.

COUNT
This shows the number of times that the condition set for stopping has occurred.
Press the F4 button to change the setting.

CH
A check mark appears in this column if one or both CONDITION and LEVEL settings have been set.

CONDITION
This shows the current setting.
Press the VALUE knob to open the settings screen.

LEVEL
This shows the current setting.
Press the VALUE knob to open the settings screen.

OK (F1 button)
Press to confirm the settings and return to the previous screen.

COUNT settings

Press the F4 button to open the following screen where you can input numbers.

For instructions about inputting numbers, see "12-4. Inputting characters as setting values" on page 50.

CONDITION and LEVEL settings

Press the VALUE knob to open the settings screen.

CONDITION

The options are UP and DOWN.

LEVEL

Enter an amount of the settings range as a %.

15-1-3. INTERVAL

REC TIME [sec]

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

INTERVAL [sec]

Sets 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 value to at least 6 seconds.

REPEAT COUNT

Input the number of recording repetitions.

15-1-3-1. START TIME

Selection
Use the VALUE knob and the left and right (◀, ▶) buttons to change the selection.
Press and turn the VALUE knob to change the value of the selected item.

OK (F1 button)
Confirm the settings and return to the TRG screen.

CANCEL (F2 button)
Cancel changing settings and return to the TRG screen.

Current (F3 button)
Set to the current time of the unit's clock.

NEXT 00sec (F4 button)
Change the starting time to the beginning of the next minute.

16. MISC settings

Selection
Use the VALUE knob and the up, down, left and right (▲, ▼, ◀, ▶) buttons to change the selection.
Press the VALUE knob to change the setting of the selected parameter.

DISPLAY DATA
Sets how the signal level is shown.
The options are % (bar meter) and dB (bar meter).

DISPLAY CH
Sets the number of channels shown on the Home Screen.
The options are 16ch and 32ch.

SPEAKER
Sets the speaker sound source.
The options are MEMO and DATA

FAN
Sets the operation of the fans.
The options are ON and OFF.
When set to OFF, the fans will be kept off from the start of measurement recording for up to 10 minutes. After 10 minutes the fan will turn on as necessary to keep the units from overheating.

- Set this to OFF if the sound of the fans might affect measurements when, for example, measuring noise.
- After recording with the fan stopped, wait at least 10 minutes before recording with the fan stopped again. Use a sufficient interval time when conducting interval recording or other repeated recording in particular.

NOTATION
Sets the sampling notation.
The options are SAMPLE (frequency) and BANDMAX (band).

16-1. Saving and loading setting values

You can save the system's settings and load saved setting values.

16-1-1. LOAD

Use to load setting values.

1 **Select the media with the settings you want to load.**

2 **Select the data you want to load.**

3 **Select "OK" and press the VALUE knob.**

16-1-2. SAVE

Use to save the current settings of the system.

1 Select the media where you want to save the settings.

2 Set the file name for the saved settings.

To overwrite an existing file, select that file and press the VALUE knob to save the settings and reopen the PARAMETER screen.

To save a new file, press the F4 button to input the file name.

Press the F1 button to save the settings and reopen the PARAMETER screen.

16-1-3. INITIALIZE

Use to restore the system's settings to their original values.
Select initialize to open a confirmation screen.

Select the OK button and press the VALUE knob to initialize.

16-2. LANGUAGE

You can set the unit to use Japanese or English.
Select LANGUAGE (言語) and press the VALUE knob to change the setting of the selected parameter.

16-3. NETWORK

Follow the instruction of your LAN administrator when making network settings.

- For instructions about inputting numbers, see "12-3. Inputting numbers as setting values" on page 50.

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

NAME
Sets the name that is used to identify this system when using the included WX Navi software.

MAC
Shows this system's MAC address.

OK (F1 button)
Confirm the settings and return to the MISC screen.

Default (F4 button)
Restore settings to their original values. If DHCP is OFF, settings will be restored to their original factory values.

16-4. TIMESET

Set the date and time of the internal clock.

Turn the VALUE knob to change the selection, and press and turn the VALUE knob to change a value.

- For instructions about inputting characters, see "12-3. Inputting numbers as setting values" on page 50.

OK (F1 button)
Set the internal clock and return to the MISC screen.

YYYY-MM-DD (F2 button)
MM-DD-YYYY (F3 button)
DD-MM-YYYY (F4 button)
Sets the order of the date display.
The year, month and day are shown by the following characters.

YYYY: Year
MM: Month
DD: Day

16-5. LCD

Set the amount of time until the backlight turns off and how bright it is.
If no front panel controls are used for the BACKLIGHT OFF time, the backlight will turn off automatically.
Set the BACKLIGHT OFF time until the backlight turns off automatically if no controls are used.

OK (F1 button)
Confirm the settings and return to the MISC menu.

DARK (F3 button)
LIGHT (F4 button)
Adjust the brightness of the backlight.

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

16-6. BEEP

Turn the beeping (alarm) sounds on and off.

Selection
Use the VALUE knob and up and down (▲, ▼) buttons to change the selection.

BUTTON BEEP
Set whether or not the system beeps when using buttons (other than the SHIFT button).

WARNING BEEP
Set whether or not the system beeps when warnings occur.

OK (F1 button)
Confirm the settings and return to the MISC menu.

16-7. VERSION

Show the versions of the programs used within the WX-7000 recording unit and the AU-WXEPIO expansion units.

OK (F1 button)
Return to the MISC menu.

17. Options

17-1. Remote control

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 connector on the rear panel of the recording unit with the included cable.

EVENT button
Add an event mark.

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

STOP (■ STOP) button
Stops recording and playback.

Recording (● REC) button
Press when stopped to make the system record ready.

Playback (► FWD) button
Press when stopped or playback ready to start playback.
Press when record ready to start recording.

Pause (II PAUSE) button
Press when stopped or playing back to make the system playback ready.
Press when recording to make record ready.

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

17-2. Interface cards

The following optional card is available.

- IRIG-B timecode signal/GPS data input card

18-1. Recording unit (WX-7000)

Recording media

RDX

Built-in 3.5-inch RDX drive 1
Compatible RDX cartridge types ..... HDD and SSD
Recording capacities..... HDD: 500 GB – 2 TB
SSD: 64 GB – 512 GB

Operation verified: Imation RDX cartridges, Tandberg Data RDX cartridges

SDHC

SDHC card slot 1
Compatible media ..... SDHC cards (SDXC not supported)

Recording capacity ..... 4 GB – 32 GB
Speed class..... Class 10 recommended

Operation verified: SanDisk SDHC cards

- Media that has been verified to operate with this system

  We provide a list of RDX cartridges and SDHC cards that we have verified the operation with this unit on our Information Products Division data recorders website.
  https://datarecorder.jp/en/
  You can also contact the sales office of our Information Products Division.

Sampling frequencies and bands

Sampling frequency (Fs)/2.4 = band
Series ①: Corresponds to DAT/audio sampling frequencies
Series ②: Corresponds to integer frequencies
Series ③: Frequency axis during 2^N FFT analysis: integrated in resolution

Series ④: Frequency axis during 2^N FFT analysis: integrated in resolution

Series ①		Series ②		Series ③		Series ④	
Fs (kHz)	Band (kHz)	Fs (kHz)	Band (kHz)	Fs (kHz)	Band (kHz)	Fs (kHz)	Band (kHz)
192.00	80.00	200.00	83.33	204.80	85.33	131.07	54.61
96.00	40.00	100.00	41.67	102.40	42.67	65.54	27.31
48.00	20.00	50.00	20.83	51.20	21.33	32.77	13.65
24.00	10.00	20.00	8.33	25.60	10.67	16.38	6.83
12.00	5.00	10.00	4.17	12.80	5.33	8.19	3.41
6.00	2.50	5.00	2.08	5.12	2.13	4.10	1.71
3.00	1.25	2.00	0.83	2.56	1.07	2.05	0.85
1.50	0.63	1.00	0.42	1.28	0.53	1.02	0.43

Number of channels that can be recorded simultaneously

Fs (kHz)				RDX recording 6 MB/s		SDHC recording 1.5 MB/s	
Series ①	Series ②	Series ③	Series ④	16-bit	24-bit	16-bit	24-bit
192.00	200.00	204.80	131.07	16 ch	8 ch	—	—
96.00	100.00	102.40	65.54	32 ch	16 ch	8 ch	—
48.00	50.00	51.20	32.77	64 ch	32 ch	16 ch	8 ch
24.00	20.00	25.60	16.38	128 ch	64 ch	32 ch	16 ch
12.00	10.00	12.80	8.19	128 ch	128 ch	64 ch	32 ch
6.00	5.00	5.12	4.10	128 ch	128 ch	128 ch	64 ch
3.00	2.00	2.56	2.05	128 ch	128 ch	128 ch	128 ch
1.50	1.00	1.28	1.02	128 ch	128 ch	128 ch	128 ch

Recording times

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

Approximate total 16-bit recording times for a 1TB RDX HDD (in days, hours:minutes:seconds)

Fs (kHz)	Band (kHz)	8 channels	16 channels	32 channels	64 channels	96 channels	128 channels
192.00	80.00	3 days, 18:10:58	1 day, 21:09:00	—	—	—	—
96.00	40.00	7 days, 11:53:54	3 days, 18:10:58	1 day, 21:09:00	—	—	—
48.00	20.00	14 days, 21:56:32	7 days, 11:53:54	3 days, 18:10:58	1 day, 21:09:00	—	—
24.00	10.00	29 days, 12:34:47	14 days, 21:56:32	7 days, 11:53:54	3 days, 18:10:58	2 days, 12:10:26	1 day, 21:09:00
12.00	5.00	57 days, 20:48:58	29 days, 12:34:47	14 days, 21:56:32	7 days, 11:53:54	5 days, 0:20:52	3 days, 18:10:58
6.00	2.50	111 days, 6:48:000	57 days, 20:48:58	29 days, 12:34:47	14 days, 21:56:32	10 days, 0:41:45	7 days, 11:53:54
3.00	1.25	206 days, 16:03:27	111 days, 6:48:00	57 days, 20:48:58	29 days, 12:34:47	20 days, 1:23:31	14 days, 21:56:32
1.50	0.63	361 days, 16:06:02	206 days, 16:03:27	111 days, 6:48:000	57 days, 20:48:58	40 days, 2:47:2	29 days, 12:34:47

Approximate total 24-bit recording times for a 1TB RDX HDD (in days, hours:minutes:seconds)

Fs (kHz)	Band (kHz)	8 channels	16 channels	32 channels	64 channels	96 channels	128 channels
192.00	80.00	1 day, 21:09:00	—	—	—	—	—
96.00	40.00	3 days, 18:10:58	1 day, 21:09:00	—	—	—	—
48.00	20.00	7 days, 11:53:54	3 days, 18:10:58	1 day, 21:09:00	—	—	—
24.00	10.00	14 days, 21:56:32	7 days, 11:53:54	3 days, 18:10:58	1 day, 21:09:00	—	—
12.00	5.00	57 days, 20:34:47	14 days, 21:56:32	7 days, 11:53:54	3 days, 18:10:58	2 day, 0:10:26	1 day, 21:09:00
6.00	2.50	57 days, 20:48:58	57 days, 20:34:47	14 days, 21:56:32	7 days, 11:53:54	5 days, 0:20:52	3 days, 18:10:58
3.00	1.25	111 day, 6:48:00	57 days, 20:48:58	57 days, 20:34:47	14 days, 21:56:32	10 days, 0:41:45	7 days, 11:53:54
1.50	0.63	206 days, 16:03:27	111 day, 6:48:00	57 days, 20:48:58	57 days, 20:34:47	20 days, 1:23:31	14 days, 21:56:32

Approximate total 16-bit recording times for a 32GB SDHC (in days, hours:minutes:seconds)

Fs (kHz)	Band (kHz)	8 channels	16 channels	32 channels	64 channels	96 channels	128 channels
192.00	80.00	—	—	—	—	—	—
96.00	40.00	5:44:51	—	—	—	—	—
48.00	20.00	11:26:10	5:44:51	—	—	—	—
24.00	10.00	22:38:19	11:26:10	5:44:51	—	—	—
12.00	5.00	1 day, 20:22:18	22:38:19	11:26:10	5:44:51	—	—
6.00	2.50	3 days, 13:19:48	1 day, 20:22:18	22:38:19	11:26:10	7:39:1	5:44:51
3.00	1.25	6 days, 14:28:12	3 days, 13:19:48	1 day, 20:22:18	22:38:19	15:18:2	11:26:10
1.50	0.63	11 day, 13:19:22	6 days, 14:28:12	3 days, 13:19:48	1 day, 20:22:18	30:36:4	22:38:19

Approximate total 24-bit recording times for a 32 GB SDHC (in days, hours:minutes:seconds)

Fs (kHz)	Band (kHz)	8 channels	16 channels	32 channels	64 channels	96 channels	128 channels
192.00	80.00	—	—	—	—	—	—
96.00	40.00	—	—	—	—	—	—
48.00	20.00	5:44:51	—	—	—	—	—
24.00	10.00	11:26:10	5:44:51	—	—	—	—
12.00	5.00	22:38:19	11:26:10	5:44:51	—	—	—
6.00	2.50	1 day, 20:22:18	22:38:19	11:26:10	5:44:51	—	—
3.00	1.25	3 days, 13:19:48	1 day, 20:22:18	22:38:19	11:26:10	7:39:1	5:44:51
1.50	0.63	6 days, 14:28:12	3 days, 13:19:48	1 day, 20:22:18	22:38:19	15:18:2	11:26:10

- The recording times given in the above tables are approximations. Actual recording times might differ depending on the recording media used.
- The above times are total possible recording times for the media. They are not continuous recording times.
- 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: 1 TB = 1×1000×1000×1000×1000)
Reserved space: headers and other files besides user data that use approximately 50 MB
Analog-digital conversion bit depth: bytes required for the quantization bit depth (4 for 24-bit or 2 for 16-bit)
8000: voice memo transmission speed at 8 kHz fixed sampling frequency with 8-bit quantization (8000 bytes/sec)

Calculation example

Total recording time for 16 channels at 192 kHz sampling frequency with 16-bit quantization on a 1TB RDX HDD:

Recording time (seconds) = (1000 × 1000 × 1000 × 1000) - (50 × 1024 × 1024)/(192 × 1000 × 16 × 2+8000)
= 162540 seconds = 1 day, 21:09:00

Analog monitoring output

Number of output channels 1
Monitor signal source options
Any active data channel or voice memos
Output connector . . . . . BNC (Z=50 Ω type)
Output format . . . . . Unbalanced
Output impedance . . . . . 50 Ω ±10%
Output range setting . . . . . ±1 to ±5 V
selectable in 0.1 V increments
Maximum output current . . . . . ±10 mA (into 20 Ω load)
Output signal quantization bit depth 24-bit
Digital-analog conversion . . . . . ΔΣ method
with 24-bit, 128x oversampling

Voice memo input and output

Sampling frequency . . . . . 8 kHz
Quantization bit depth . . . . . 8-bit (WAV file)
Number of input channels . . . . . 1 (mono)
Input connector . . . . . 3.5 mm TS mini jack
Monitoring connector . . . . . 3.5 mm TS mini jack
- SPEAKER output off when earphone connected

Output level adjustment . . . . . VOLUME knob
Monitoring . . . . . Voice memo signal can be set as monitoring output

Internal clock

Clock precision . . . . . ±2 PPM (at 25 °C)
Battery life . . . . . 5 or more years

External interfaces

1000BASE-T LAN connector 1
with LINK/ACTIVITY LED
DIGITAL CONTROL signal connector 1
Angled half-pitch 50-pin
Hirose DX10A-50S
Signal format: TTL level
for ER-WXRC REMOTE CONTROLLER
AQ-VU synchronization connector 1
EXT TRIGGER IN signal input connector 1
BNC connector
Signal format: TTL level
Recording starts when TRIGGER stopped
with LOW (0.4 V or less) signal.
EXPANSION OUT expansion unit connector 1
SYNC IN synchronized recording connector 1
SYNC OUT synchronized recording connector 1
UPS SIGNAL IN contact signal input connector 1
Recording completion procedures are conducted when a power outage signal is received.
FG (frame grounding) connector 1

18-2. Input/output unit (AU-WXEPIO)

Analog signal input channels

Input amplifier switching	Can be switched between DC input and PA input	
Input signal type	DC input	PA input
Number of input channels	16	
Input connectors	BNC (Z=50 Ω type)	
Input format	Unbalanced	
Input impedance	1 MΩ or more	
Input signal and amplifier coupling	DC coupling	AC coupling
Input range options	±0.1, 0.2, 0.5, 1, 2, 5, 10, 20 V	
Input filter	—	Analog filter
High pass filter	—	3rd-order Butterworth analog filter 10 Hz (within ±0.5 dB), 20 Hz (within ±0.5 dB)
Weighting	—	A curve, C curve or flat IEC-TYPE1
Absolute maximum input voltage (input range value)	±50 V (0.1, 0.2, 0.5, 1, 2, 5 V), ±100 V (10, 20 V)	
2-color input level LED (red/green)	Lights green when input level exceeds 10% of its input range and lights red when it exceeds 115%.	Lights green when input level exceeds 10% of its input range and lights red when it exceeds 115%. Lights both green and red when there is no ICP current.
Input signal quantization bit depth	24-bit or 16-bit switchable	
Over range	±127% (+2.08 dB)	
Analog-digital conversion method	ΔΣ method with 24-bit, 128x oversampling	
Input frequency flatness characteristics (0 dB at 100 Hz) (Sampling frequency/2.4)	10 V or less input range Band (40 kHz or less): ±0.5 dB or less Band (80 kHz or less): +0.5 to – 1.0 dB 20 V input range Band (20 kHz or less): ±0.5 dB or less Band (80 kHz or less): +0.5 to – 2.5 dB	
Input range precision	±2% or less	
Nonlinearity	±0.1% or less	—
Input DC drift stability	±0.1% or less (10 or more minutes after power supplied)	—
OFFSET, gain correction	Correction function available	
Measured frequency of phase contrast between input channels (Sampling frequency/2.4)	10 V or less input range Band (20 kHz or less): 1° or less (in same expansion unit) 2° or less (in different expansion unit) Band (80 kHz or less): 3° or less 20 V input range Band (20 kHz or less): 2° or less (in same expansion unit) 3° or less (in different expansion unit) Band (80 kHz or less): 3° or less	
Voltage supplied to ICP sensors	—	Can be set to 28 V or 24 V DC for each expansion unit (all 16 channels at once)
ICP sensor constant current source	—	Can be set to OFF, 0.5 mA or 4 mA per channel
ICP sensor interruption detection	—	Each channel has ICP sensor interruption detection
TEDS	—	Supports TEDS Ver. 1.0

DC/PA input amplifier signal to noise (SN) ratio[1]

Input range	Band (20 kHz or less)		Band (40 kHz or less)		Band (80 kHz or less)	
	16-bit	24-bit	16-bit	24-bit	16-bit	24-bit
Up to 1 V	85 dB	87 dB	84 dB	85 dB	82 dB	82 dB
1 – 20 V	87 dB	98 dB	87 dB	93 dB	86 dB	91 dB

DC/PA input amplifier distortion . . . . . 0.1% or less
DC/PA input amplifier crosstalk[2] (1 V input range) . . . . . –80 dB or less

[1]Noise level compared to 100% of the given input range
[2]Signal leakage level from other channels compared to 100% of the given input range.
The measured signal frequency is the sampling frequency divided by 2.4.

Analog signal output channels

Number of output channels 16
Output connectors . . . . . BNC (Z=50 Ω type)
Output format . . . . . Unbalanced
Output impedance . . . . . 50 Ω ±10%
Output range setting . . . . . ±1 to ±5 V
selectable in 0.1 V increments
Maximum output current . . . . . ±10 mA (into 20 Ω load)
Quantization bit depth . . . . . 24-bit or 16-bit switchable
Digital-analog conversion . . . . . ΔΣ method
with 24-bit, 128x oversampling
Output frequency flatness characteristics
(10 V or less input range)
Band (20 kHz or less) . . . . . ±0.5 dB or less
Band (40 kHz or less) . . . . . +0.5 to – 1.0 dB or less
Band (80 kHz or less) . . . . . +0.5 to – 2.5 dB or less
(20 V input range)
Band (20 kHz or less) . . . . . +0.5 to – 1.0 dB or less
Band (40 kHz or less) . . . . . +0.5 to – 1.5 dB or less
Band (80 kHz or less) . . . . . +0.5 to – 3.0 dB or less
Output range precision . . . . . ±2% or less
Output nonlinearity . . . . . ±0.1% or less
Output distortion (THD) . . . . . ±0.1% or less
Output dynamic range (1 V input range in 20 kHz band or less)
24-bit: 97 dB
16-bit: 89 dB
Signal to noise(SN) ration (1 V input range)
band (20 kHz or less) . . . . . 24-bit:95 dB
16-bit:87 dB
band (40 kHz or less) . . . . . 24-bit:92 dB
16-bit:87 dB
band (80 kHz or less) . . . . . 24-bit:82 dB
16-bit:78 dB
Crosstalk between output channels (1 V input range)
-74 dB or more

Measured frequency of phase contrast between input channels
(10 V or less input range)
Band (20 kHz or less):
1.5° or less (in same expansion unit)
2° or less (in different expansion unit)
Band (80 kHz or less): 3° or less
(20 V input range)
Band (20 kHz or less):
2° or less (in same expansion unit)
3° or less (in different expansion unit)
Band (80 kHz or less): 3° or less

External interfaces

EXPANSION IN expansion unit connector 1
EXPANSION OUT expansion unit connector 1

Power supply

DC IN connector . . . . . for AC power adaptor
2 of 4 pins used

- See "Powering the unit" on pages 13 - 14 For illustrations showing how to connect the adaptor(s).

FG (frame grounding) connector 1

18-3. General

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

WX-7000 ..... 340 x 82 x 220 mm/4.1 kg
AU-WXEPIO..... 340 x 40 x 220 mm/3.1 kg
WX-7016 ..... 340 x 123 x 220 mm/7.4 kg
WX-7032 ..... 340 x 164 x 220 mm/10.4 kg
WX-7064 ..... 340 x 246 x 220 mm/17.1 kg
WX-7096 ..... 340 x 396 x 370 mm/26.4 kg
WX-7128 ..... 360 x 478 x 370 mm/33.9 kg
*Not including AC adaptors, media and optional boards.
Sidebar attachment screws ..... M4 binding x 6
Rubber feet attachment screws..... M3 binding x 8

DC power supply input

11 – 30 V DC (powered from included AC adaptor)

Power consumption

WX-7000 ..... approximately 15 W
AU-WXEPIO..... approximately 38 W
WX-7016 ..... approximately 53 W
WX-7032 ..... approximately 90 W
WX-7064 ..... approximately 166 W
WX-7096 ..... approximately 242 W
WX-7128 ..... approximately 317 W

AC adaptors (included)

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

Operating conditions

Operating temperature.....0 to 40°C
Operating humidity range..... 10–80% (no condensation)
Storage temperature .....–20 to +60°C
Storage humidity range.....5–90% (no condensation)
Operating air pressure range.....860–1060 hPa
Vibration resistance..... MIL-STD-810E Figure 514.4-1, 2, 3 (not including RDX HDD)

- Confirm the operating conditions of each type of recording media. In cold temperatures, we recommend using an RDX SSD or an SDHC card. Use RDX cartridges in environments with operating temperatures of at least 10º C. When you expect to use a cartridge in an environment that is colder than 10º C, let the unit run to warm up for at least 45 minutes before use.

Note

Cooling fan life .....30,000 hours (fan alone at 20°C)

18-4. Included accessories

WX Navi measured data waveform display software..... 1
Microphone for voice memos..... 1
Earphone for voice memos 1
CD-ROM..... 1
Contents: Instructions for Use, WX Navi software, WX Navi Instructions for Use
Quick Start Guide..... 1 printed
Expansion connection cables
WX-7016 1
WX-7032 2
WX-7064 4
WX-7096 6
WX-7128 8
AC adaptors
WX-7016 1
WX-7032 1
WX-7064 2
WX-7096 3
WX-70128..... 4
AC adaptor power cords..... According to the number of AC adaptors (1 for domestic use and 2 for overseas use per adaptor)
Ferrite cores ..... Pre-attached to AC adaptors
DC power cable 1

18-5. Options

AU-WXEPIO.....Expansion unit
ER-WXRC ..... Dedicated simple remote control
AR-WXIRGPS..... IRIG-B timecode signal input and GPS data input card

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

19. Exterior drawings

WX-7016

WX-7032

WX-7064

WX-7096

19. Exterior drawings

WX-7128

20. 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	Is the power adaptor connected?
	Is the DC power supply voltage too low?
Number of recording channels is less than expected	Are all the power adaptors connected correctly?
	Are all the connection cables connected correctly?
RDX cartridge not recognized	If the media is not recognized immediately after the removal and insertion of an RDX cartridge, turn the WX-7000's power off and then on again.
"Inserted media is not supported." message appears	Is compatible media loaded in the WX-7000?
	Has the media been formatted by the WX-7000? If not, use the WX-7000 to format it.
	When formatting media for the first time, format it using the WX unit.
	Are you using media that has been confirmed to work with the WX-7000?
Cannot select the sampling frequency	Is it set to more channels than the supported by the recording media?
Main unit buttons do not function	Is the panel locked? If so, unlock it.
	Buttons are disabled during WX-Navi operation. If transmission with WX-Navi should be interrupted, for example, the use of buttons will become possible again after at least 3 minutes have passed.
WX Navi does not recognize the WX-7000	Are the LAN cables connected correctly?
	Are the IP address and subnet mask settings, for example, set correctly?
	Is it being blocked by the computer's firewall?
	Turn the WX-7000 power supply on and off again and then restart WX Navi.

If you are still unable to fix the problems after checking the above, please contact our service department.

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