

UNIVERSAL RECORDER

EDX-100A

HARDWARE

INSTRUCTION MANUAL

Thank you for purchasing a product of Kyowa Electronic Instruments Co. Ltd.
Read this Instruction Manual carefully in order to make full use of the high performance capabilities of the product.

Do not use the product in methods other than described in this Manual.

This manual covers only the hardware operating instructions. For details on the DCS-100A Dynamic Data Recording Software, see the DCS-100A Instruction Manual for [EDX-100A Operation].

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The contents of this manual are subject to change without prior notice.

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This Manual describes hardware instruction manual of the EDX-100A Universal Recorder (hereinafter referred to as the EDX-100A) and RCU-41A Remote Control Unit (hereinafter referred to as the RCU-41A).

STANDARD ACCESSORIES

The following accessories are packed with the EDX-100A. When unpacking, check the contents to ensure that all accessories are enclosed.

DCS-100A Dynamic Data Recording Software	}	 1 set (DVD)
Instruction Manual		
USB driver		
DCS-100A Password paper		1 *1
Ground wire (#16 AWG 5m long)		1
DC power cable P-57		1
Fuse (For electric current capacity, see “(5) Power supply fuse in “2-2 REAR PANEL.”) ...		1
USB cable N-38		1
CF card		1
Warranty and Inspection Report		1 each

- *1. The password paper is not attached to the product of the following model.
- | | |
|----------------|-----------------|
| • EDX-100A-4-0 | • EDX-100A-4H-0 |
| • EDX-100A-2-0 | • EDX-100A-2H-0 |
| • EDX-100A-1-0 | • EDX-100A-1H-0 |
- The input of a password is required at the time of the setup of DCS-100A.
(DCS-100A is the trial version when not inputting a password.)

OPTIONAL ACCESSORIES

- | | |
|---|----------------|
| • AC adapter: | UIA345-12 |
| • Conditioner cards: | See catalogs. |
| • Dummy panel: | EDX-2000-DUMMY |
| • Remote control unit: | RCU-41A |
| • Synchronous cable: | N-95 |
| • Data analysis software: | DAS-200A |
| • Battery unit for instantaneous power failure: | EDB-41B |

SAFETY PRECAUTIONS (Be sure to read the safety precautions prior to use.)

The EDX-100A is designed in accordance with detailed contents described in “9. HARDWARE SPECIFICATIONS.”

Do not use the EDX-100A in an environment exceeding the scope of those specifications. Doing so may cause damage to the EDX-100A.

PRIOR TO USE

For safe use of the EDX-100A, be sure to read the safety precautions described below.

Kyowa Electronic Instruments Co., Ltd. assumes no liability for any damage resulting from the user's failure to comply with the safety precautions.

SAFETY SYMBOLS

For safe operation of the EDX-100A, the following “WARNING” and “CAUTION” symbols are used in SAFETY PRECAUTIONS of this manual and indicated on the product.

 WARNING	Improper operation of the system may result in death or severe injury of the operator.
 CAUTION	Improper operation of the system may result in injury of the operator and physical damage of the system.

WARNING

- **Power supply**

To prevent fire hazard, ensure that the power supply voltage specified for the EDX-100A matches the local line voltage before connecting the recorder to the DC power supply. When using an AC adapter, check the power voltage of the AC power outlet before connecting to it.

- **Inflammable Environment**

To prevent the risk of fire and explosion, do not operate the EDX-100A in an area exposed to flammable gases, vapors or dust.

- **Abnormal Condition**

To prevent fire hazard, if smoke is generated from the EDX-100A, immediately turn OFF the power switch and disconnect the DC power cable or the AC adapter from the power outlet, thereby halting the EDX-100A operation.

- **Protective Ground**

Be sure to ground the GND terminal. Failure to do so will pose a risk of electric shock, degrade performance and cause damage to the EDX-100A.

- **Maximum Input Voltage Range for Measurement by CVM-40A, CVM-41A**

Do not apply an input voltage exceeding the range (-50 V to +50 V) specified for the voltage measurement mode of the CVM-40A, CVM-41A Strain/Voltage/Acceleration Measurement Card (hereinafter referred to as the CVM-40A, CVM-41A).

Failure to do so will pose the risk of electric shock, deteriorated performance and system failure.

- **Maximum Input Voltage Range for Measurement by CDV-40B/A (-F)**

Do not apply an input voltage exceeding the range (-10 V to +10 V) specified for the voltage measurement mode of the CDV-40B/A (-F) Strain/Voltage Measurement Card (hereinafter referred to as the CDV-40B/A (-F)).

Failure to do so will pose the risk of electric shock, deteriorated performance and system failure.

- **Maximum Input Voltage Range for Measurement by CCA-40A (-F)**

Do not apply an input voltage exceeding the range (-5 V to +5 V) specified for the CCA-40A (-F) Charge Amplifier Card (hereinafter referred to as the CCA-40A (-F)).

Failure to do so will pose the risk of electric shock, deteriorated performance and system failure.

- **Maximum Input Voltage Range for Measurement by CFV-40A**

Do not apply an input voltage exceeding the range (-50 V to +50 V) specified for the CFV-40A F/V Converter Card (hereinafter referred to as the CFV-40A).

Failure to do so will pose the risk of electric shock, deteriorated performance and system failure.

- **Maximum Input Voltage Range for Measurement by CDV-44AS**

Do not apply an input voltage exceeding the range (-50 V to +50 V) specified for the voltage measurement mode of the CDV-44AS Strain/Voltage Measurement Insulation Card (hereinafter referred to as the CDV-44AS).

Failure to do so will pose the risk of electric shock, deteriorated performance and system failure.

- **Maximum Input Voltage Range for Measurement by CDA-44AS**

Do not apply an input voltage exceeding the range (-50 V to +50 V) specified for the voltage measurement mode of the CDA-44AS Signal Conditioner Card (hereinafter referred to as the CDA-44AS).

Failure to do so will pose the risk of electric shock, deteriorated performance and system failure.

- **Maximum Input Voltage Range for Measurement by CDA-45AS**

Do not apply an input voltage exceeding the range (-50 V to +50 V) specified for the voltage measurement mode of the CDA-45AS Signal Conditioner Card (hereinafter referred to as the CDA-45AS). Failure to do so will pose the risk of electric shock, deteriorated performance and system failure.

- **Maximum Input Voltage Range for Measurement by AD-40AS(-F)**

Do not apply an input voltage exceeding the range (-10 V to +10 V) specified for the AD-40AS(-F) A/D Converter Card (hereinafter referred to as the AD-40AS(-F)).

Failure to do so will pose the risk of electric shock, deteriorated performance and system failure.



WARNING

- Applicable input: DPM-42B/A (-F), DPM-42B-I (-F)

The dynamic strain amplifier card DPM-42B/A (-F), DPM-42B-I (-F) is a dedicated conditioner card for inputting strain. Do not connect an apparatus other than a strain sensor.

Failure to do so will pose the risk of electric shock, deteriorated performance and system failure.

- Applicable input: CTA-40A

The thermocouple card CTA-40A is a dedicated conditioner card for inputting a thermocouple.

Do not connect an apparatus other than a thermocouple.

Failure to do so will pose the risk of electric shock, deteriorated performance and system failure.

- Applicable input: CAN-40A, CAN-41A

The CAN card CAN-40A and CAN-41A are dedicated conditioner cards for inputting CAN data.

Do not connect a data other than a CAN data.

Failure to do so will pose the risk of electric shock, deteriorated performance and system failure.

- When using the CVM-40A, CVM-41A or CDV-40B/A (-F), keep the following points.

1. Use a tester or the like to measure the voltage between negative sides of the DC voltage and confirm that the voltage is approximately 0 V.
2. Confirm that the voltage between the negative side of the DC voltage and the GND terminal of the EDX-100A is approximately 0 V.
3. When connecting an input, correctly connect the positive and negative sides.

Failure to comply with the above precautions will result in a short circuit of the signal source (DC power supply, etc.) to be measured in the CVM-40A, CVM-41A or CDV-40B/A (-F), thus causing a fire hazard.

CAUTION

- Use the EDX-100A in the temperature range of 0 to 50°C.
Use outside the specified operating temperature range may degrade performance and cause damage to the EDX-100A.
If use under direct sunlight or in a cold place is inevitable, provide a sunshade or keep the operating area warm.
- Use the EDX-100A in the relative humidity range of 20% to 90%.
The use of the product in an environment exceeding the operating humidity range or in an area exposed to splashing water may degrade performance and cause damage to the EDX-100A.
- Do not use the EDX-100A immediately after an abrupt change in the environment.
Leave the EDX-100A in the operating environment until it is accustomed to the change prior to use.
An abrupt change in the ambient temperature and humidity due to product transportation and other reasons may result in dew condensation, which may degrade performance and cause damage to the EDX-100A.
- Do not use the EDX-100A in an area that is subject to significant vibration or impact.
 - Vibration resistance: 29.42 m/s² (3 G) at 5 to 55 Hz (when in operation) and 49.03 m/s² (5 G) at 5 to 55 Hz (when not in operation)
 - Impact resistance: 196.1 m/s² (20 G)/11 ms.Use the EDX-100A in an area where vibration and impact can be kept within the scope of specifications. Applying continuous vibration or large impact may degrade performance and cause damage to the EDX-100A.
- Do not use the EDX-100A in an area that is subject to strong electromagnetic fields.
Use the EDX-100A only in an environment where the magnetic field is acceptable to the PC.
Using the EDX-100A near a radio transmitter/receiver, microwave oven, electric furnace or any other equipment that generates a strong magnetic field may degrade performance and cause damage to the EDX-100A.
- Do not use the EDX-100A under poor power quality conditions.
Operate the EDX-100A within the range of 10 V DC to 18 VDC when a DC power supply is used or 100 VAC to 240 VAC (50/60 Hz) when an optional AC adapter (UIA345-12) is used. The power supply used for the EDX-100A should not experience a momentary power loss and should be free from noise.
- The optional AC adapter (UIA315-12) is a consumable item.
Replace it every two or three years.
- Do not turn ON the power switch immediately after turning it OFF.
After turning OFF the power switch, wait until the power supply is completely shut off (for about 5 seconds) before turning ON the power switch once again.
- Do not pull directly the connector cables.
When routing the connector cables, provide a margin for the length so that no excessive force is applied to the cable connections.
Pulling the cable or applying excessive force may cause a failure on the EDX-100A or interruption of the measurement process.
- Do not seal ventilation holes located at the back, top, bottom and sides of the EDX-100A.
Blocking the ventilation holes will increase the temperature in the product, thereby degrading performance and causing damage to the EDX-100A.
- Avoid installing sensors and EDX-100A near a welding machine.
Failure to do so will pose the risk of erroneous data, malfunction and failure.
- Do not disassemble or remodel the EDX-100A.
Failure to do so will pose the risk of electric shock and system failure.
- This warranty does not cover any damaged or defective parts that results from disassembling or remodeling.



CAUTION

- The EDX-100A limits the number of CFV-40A.
EDX-100A-1,EDX-100A-1H: Up to 1.
EDX-100A-2,EDX-100A-2H: Up to 2.
EDX-100A-4,EDX-100A-4H: Up to 2.
Or, deterioration or malfunction of the instrument may result.
- The EDX-100A limits the positions and the number of CAN-40A and CAN-41A.
Mount one CAN-40A or CAN-41A to the final slot.
- When CVM-41A using, number of channels that can be set to bridge excitation BV10 V or sensor power supply 10 VDC (± 5 V) mode, will be installed number of card $\times$ 3 channels or less.
- For the DPM-42 series and CDV-40 series with anti-aliasing function, conduct the internal calibration when changing the Low Pass Filter setting to or from "AUTO".

LIMITED LIFE PARTS AND PREVENTIVE MAINTENANCE

The EDX-100A consists of various electronic components and those components, if not all, have a useful life.

Using them exceeding the years specified according to each part type (useful life) may affect the characteristics of the EDX-100A, resulting in a malfunction or a failure.

You need to replace parts with a regular preventive maintenance schedule.

Limited life parts used with the EDX-100A are as follows.

- CF card

The CF card will be unable to read or write data.

- Aluminum electrolytic capacitor

The signal-noise ratio will be lower due to capacity low or smoke will be emitted due to liquid leak, resulting in a malfunction of the EDX-100A.

- Electric double-layer capacitor

The back-up time will be lower due to capacity low or smoke will be emitted due to liquid leak, resulting in a malfunction of the EDX-100A.

- Built-in backup battery

When you turn OFF and ON the power, the EDX-100A will be initialized to factory default or the built-in clock will be reset to factory default.

- AC adapter (optional)

The AC adapter will overheat, emit smoke or will not output stable voltages.

To operate the EDX-100A normally, finding a sign of the EDX-100A failure early by daily/periodic inspections and taking the corrective action are required.

For inspection, contact KYOWA or our representatives.

* Limited life parts used with the EDX-100A are a CF card, aluminum electrolytic capacitors, electric double-layer capacitor, built-in backup battery, and AC adapter.

* All components do age and will fail.

EDX-100A REPLACEMENT BEFORE THE END OF SERVICE LIFE

Preventive maintenance and replacement parts are a cost-effective way of keeping the performance and extending the service life of the EDX-100A.

Regardless of the replacement parts, the EDX-100A itself gradually deteriorates with age.

Before the expected service life is reached, consider replacing the EDX-100A with a new one or the latest series as preventive maintenance.

NOTATIONS USED IN THE INSTRUCTION MANUAL

INFORMATIONAL NOTES

Certain notations are used as necessary to urge attention to information that requires special attention when handling the EDX-100A, and to information provided for reference purposes.

Examples of Notations

NOTE

The information provided merits special attention in the handling of the recorder.

MEMO

The information provided is useful as a reference.

IMPORTANT INFORMATIONAL NOTES FOR USE OF THE EDX-100A

NOTE

1. Never turn OFF the power while recording data.
Doing so may invalidate the data being recorded. In some cases, data in the CF card or the card itself may become damaged.
2. Never turn OFF the power while collecting data via the LAN or USB interface. Doing so may destroy data in the CF card or damage the card itself.
When the LAN or USB interface is used for collecting data, you cannot see whether data is being collected simply through a visual check of the main unit. Therefore, before turning OFF the power, use the control software to check that data is not being collected.
3. If the possibility exists that a power failure may occur, be sure to use an uninterruptible power supply unit.
4. When using an external battery, use the one with sufficient capacity to cover the length of measuring time. For details of the current consumption of the EDX-100A, see "9-1 OVERALL SPECIFICATIONS."
5. Prior to data recording, be sure to insert a CF card into the card slot of the main unit.
Data recording cannot be started without the CF card inserted.
6. Never extract the CF card from the slot while the BUSY LED is lit or flashing green.
Extracting the CF card while accessing the card such as while recording, deleting or collecting data via the LAN/USB (when the BUSY LED is lit or flashing green) may damage the data in the CF card or damage the card itself. If the CF card is accidentally extracted while accessing to the CF card, check the contents of the card on the PC. If the CF card is faulty, reformat the CF card.
7. Use the accessory CF card (128MB).
If use other than accessories or the recommended CF card, there is that the measurement is interrupted, or the abnormal recorded data file is generated. When using the other than accessory CF card, please contact our business offices, or representatives.
8. To ensure accurate measurement, turn ON the power and warm up the unit for about 30 minutes before starting the measurement.
9. Always use the accessory shield cable for connecting sensors to the conditioner card. In addition, use the shield cable for wiring of sensors and accessory cable or wiring to the terminal.

1. PRODUCT OVERVIEW

1-1 OVERVIEW

The EDX-100A is a recorder that is provided with the following characteristics and functions:

- Compact and lightweight; high speed sampling; online/offline measurement; data recording function to the compact flash card
- Online measurement using the LAN or USB interface
- Multiconditioner function compatible with a variety of sensors
- Voice memo recording

The EDX-100A is available in 3 channel types according to the type of the chassis. Data can be recorded from the following number of channels:

32 channels:	EDX-100A – 4	EDX-100A – 4H
16 channels:	EDX-100A – 2	EDX-100A – 2H
8 channels:	EDX-100A – 1	EDX-100A – 1H

* Note: “H” in the model name means that the unit comes with a handle.

Various settings are conducted from the PC via the LAN or USB interface or using the compact flash card (hereinafter referred to as the CF card) on which the data recording conditions are recorded in advance.

You can start data recording via operation from the PC or by using buttons on the main unit, and can monitor the data online. The recorded data is directly written into the CF card and data can be collected online from the PC or offline using the CF card.

Online control via the PC is conducted with the DCS-100A, which enables to set measuring conditions; record, monitor, and collect data as well as to display the data waveform. Data analysis is available by the optional DAS-200A Data Analysis Software (hereinafter referred to as the DAS-200A) or DIAdem.

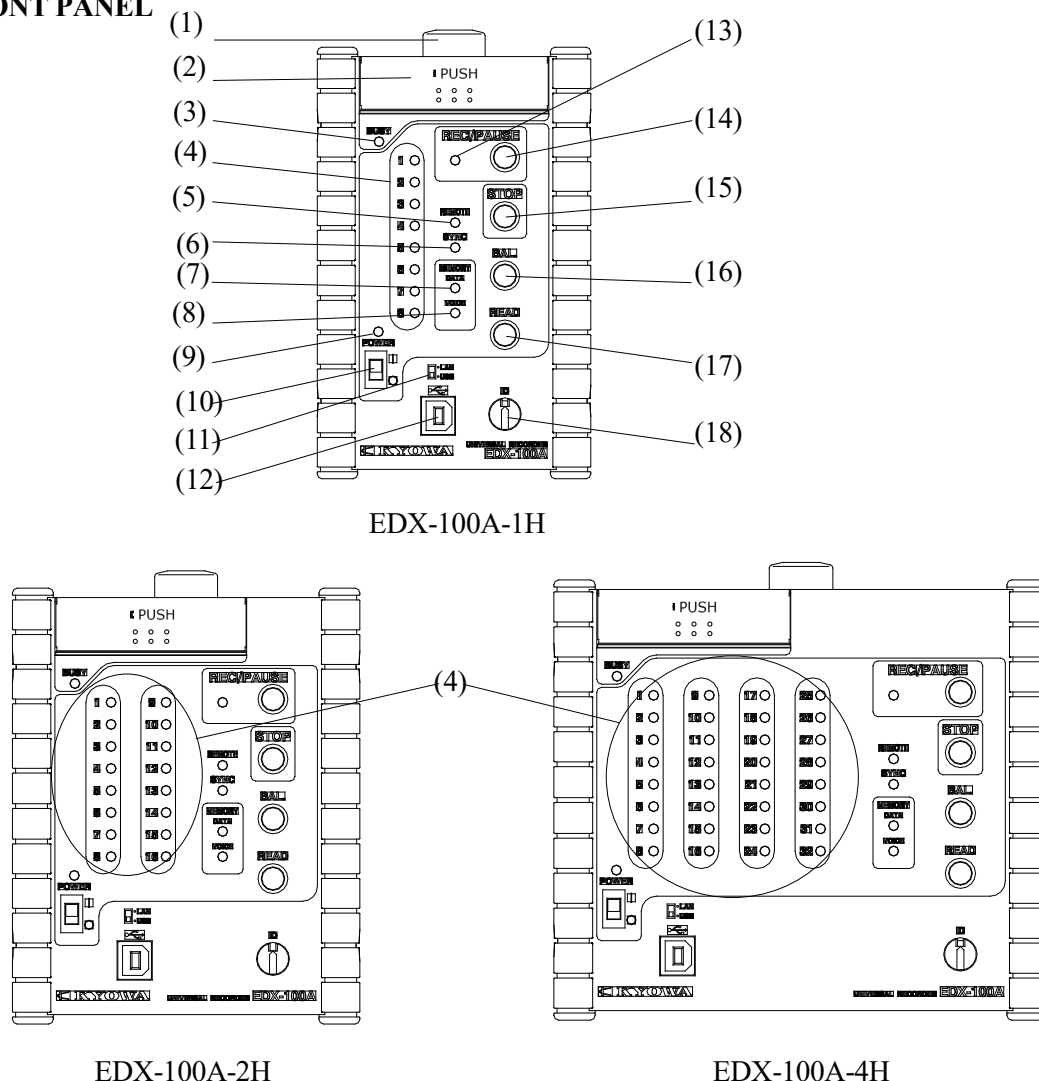
In addition, recording voice memo is available and recording CAN data is also available by CAN card.

1-2 FEATURES

- Base units are provided for 32-channel, 16-channel and 8-channel types to accommodate the maximum number of measuring channels for the respective types.
- Using various conditioner cards designed for the EDX-2000A.
- Recording CAN data is available by the CAN card.
- By connecting the EDX-100A with synchronous cables, synchronous operation of maximum 8 units is available.
(Recording of maximum 256-channel data at a time is available by using 8-CH/conditioner card.)
- Maximum sampling frequency is 100 kHz (while recording data from only 1 channel).
- Connection with the PC is easy with the use of the LAN or USB interface.
- Recorded data is directly recorded into a high capacity CF card (128 MB to 2 GB capacity; 45× speed or faster).
- Various measuring conditions are set online from the PC or set offline by reading the measuring conditions in the CF card.
- You can start/stop data recording and adjust the strain input channel balance by switches on the main unit.
- TEDS compatible function enables work saving for amplifier setting.
- While recording data, voice memo can be recorded at the same time.
- Provided with the DCS-100A that controls the EDX-100A from the PC.
- Using a dedicated RCU-41A (Optional), you can start/stop data recording, adjust the balance and record voice memos.

2. PARTS NAMES AND MAIN FUNCTIONS

2-1 FRONT PANEL



(1) Handle A handle. You can choose a model with or without a handle.

With no handle	{	EDX-100A-1
		EDX-100A-2
		EDX-100A-4
With a handle	{	EDX-100A-1H
		EDX-100A-2H
		EDX-100A-4H

(2) “CF CARD” slot A CF card is inserted into this slot. Open the latching lid by lightly pressing the bottom part of the “PUSH” portion. In the same manner, close the lid by lightly pressing the same.

(3) “BUSY” LED The BUSY LED lights up or flashes green while accessing to the CF card. See Table 1-1.

(4) “CH” LED Displays the state of each channel. See Table 1-1.

EDX-100A-1(H)	Channels 1 to 8	Total of 8 channels
EDX-100A-2(H)	Channels 1 to 16	Total of 16 channels
EDX-100A-4(H)	Channels 1 to 32	Total of 32 channels

(5) “REMOTE” LED The REMOTE LED lights up during online control from the PC. See Table 1-2.

- (6) "SYNC" LED The SYNC LED lights up when synchronous operation. See table 1-2.
- (7) "MEMORY DATA" LED Displays available capacity for recording data. See Table 1-3.
- (8) "MEMORY VOICE" LED Displays available capacity for recording voice memo. See Table 1-3.
- (9) "POWER" LED The POWER LED lights up when power is turned ON. See Table 1-1.
- (10) "POWER" switch Flip up the POWER switch to the "I" side to turn ON and, to the "O" side to turn OFF the EDX-100A.
- (11) "LAN/USB" switch This switch is used to select an interface for online control.
- (12) "USB" connector A USB connector.
- (13) "REC/PAUSE" LED Displays the state of data recording. See Table 1-2.
- (14) "REC/PAUSE" switch Starts or pauses data recording.
- (15) "STOP" switch Stops data recording.
- (16) "BAL." switch Performs balancing. (This function is enabled by pressing and holding the switch for 1 second or more.)
- (17) "READ" switch Reads data recording conditions from the CF card.
- (18) "ID" switch A switch used for identifying whether the EDX-100A is solely used (Stand-alone) or multiple EDX-100A units are used for synchronous operation.
- When data is recorded with 1 unit (Stand-alone), set this ID switch to "F."
- When synchronous operation is conducted with multiple EDX-100A units, set the master unit to "0," and slave units to any numbers from "1 to 7." (See the table below.)

ID No.	0	1 to 7	8 to 9	A	B, C, D, E	F
Function	Sync master	Sync slave	Not used	Reserved: for maintenance	Not used	Stand-alone

MEMO

- When a strain sensor is used, the Balancing function eliminates imbalance in the strain gage bridge and adjusts the measured data to almost zero. This function can be used when CVM-40A/41A, CDV-40B/A (-F), DPM-42B/A (-F), DPM-42B-I (-F), CDV-44AS, CDA-44AS, and CDA-45AS conditioner cards are used.
- When measurement is conducted with only one EDX-100A, it is called stand-alone measurement.
- Synchronous master unit is an EDX-100A that sends sampling clock and DPM carrier to slave units during synchronous operation. Trigger measurement of the synchronous operation can only be set for synchronous master unit.
- Synchronous slave units are EDX-100A units that receive the sampling clock and DPM carrier from the master EDX-100A during synchronous operation and record data at the same time.

Table 1-1 LED Status Displays

LED Status		BUSY	CH LED	POWER
Green	ON	Accessing to the CF card	Normal (Measurement OK)	Power ON
	Flashing		Calibration output in progress	
Orange	ON		Balancing in progress	
	Flashing		Balance NG	
Red	ON	Measurement disabled state Note 1	Sensor input overflow detected	
	Flashing	Residual capacity of the built-in backup battery is short. Note 2	Sensor input overflow solved Note 3	Voltage drop in the DC power supply (Flashes at less than approx. 11 V)
OFF		Measuring condition setup OK	Measurement OFF Conditioner card not installed	Power OFF

Note 1: The EDX-100A is in measurement disabled state. Refer to “6-1 TROUBLESHOOTING FOR THE MAIN UNIT EDX-100A” and remove the cause.

Note 2: Replacing the built-in backup battery is required. As the used battery must be returned for replacement with a new one, contact the KYOWA or our representatives.

Note 3: Sensor input overflow exceeding the specified range has been solved and the signal within the specified range is currently entered.

Table 1-2 LED Status Displays

LED Status		REC/PAUSE	REMOTE LED	SYNC
Green	ON		During online control via LAN interface	Synchronous master ID switch = “0”
	Flashing	Monitoring via online control		
Orange	ON		During online control via USB interface Note 4	Synchronous slave ID switch = “1 to 7”
	Flashing			
Red	ON	Data recording or voice memo recording in progress		
	Flashing	Data recording paused		External clock error
OFF		Monitoring stopped and data recording stopped	Offline	Stand-alone ID switch = “F”

Note 4: The REMOTE LED lights up orange when the USB interface connector is connected to the PC, and turns OFF when it is disconnected.

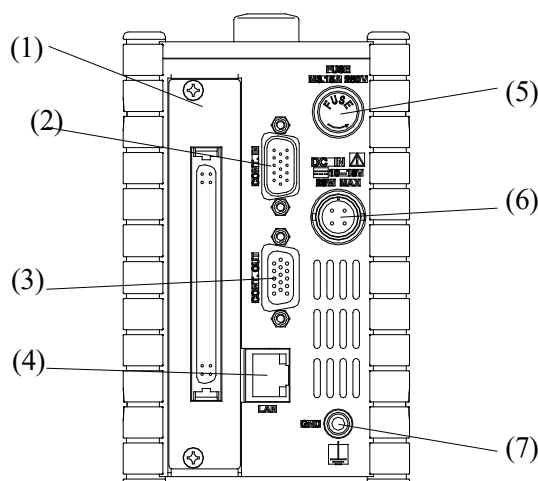
Table 1-3 ED Status Displays

LED Status		MEMORY DATA	MEMORY VOICE
Green	ON	The residual capacity of the CF card for recording data is 30% or more.	The remaining time for recording voice memo is 300 seconds or more.
Orange	ON	The residual capacity of the CF card for recording data is 5% to 30%. Note 5	The remaining time for recording voice memo is 60 seconds up to 300 seconds or more.
Red	ON	The residual capacity of the CF card for recording data is 0%.	The remaining time for recording voice memo is 0 second.
	Flashing	The residual capacity of the CF card for recording data is less than 5%.	The remaining time for recording voice memo is less than 60 seconds.
Off		No CF card inserted.	Failure Note 6

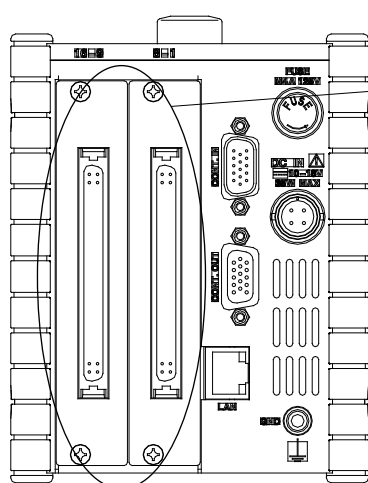
Note 5: It is recommended to replace the CF card with the one having sufficient capacity.

Note 6: The EDX-100A may be faulty. As the faulty product must be taken back to the KYOWA for troubleshooting and repair, contact us or our representative.

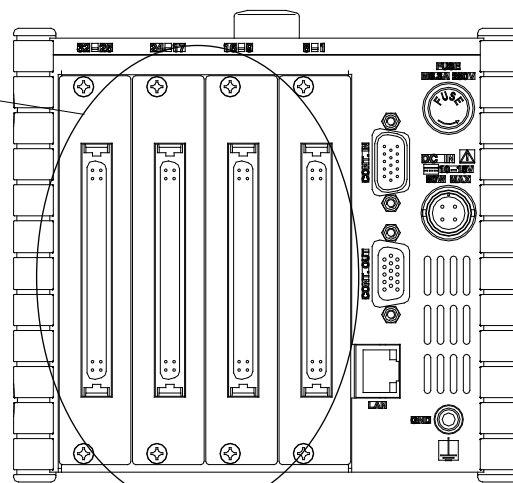
2-2 REAR PANEL



EDX-100A-1H



EDX-100A-2H



EDX-100A-4H

- | | | |
|----------------------------|---------------|----------------------------------|
| (1) Conditioner card | EDX-100A-1(H) | 1-CH to 8-CH conditioner cards. |
| | EDX-100A-2(H) | 1-CH to 16-CH conditioner cards. |
| | EDX-100A-4(H) | 1-CH to 32-CH conditioner cards. |

MEMO

Channel No. is determined by the location where the conditioner is inserted. The channel Nos. are assigned from right to left as viewed from the rear side.

- (2) CONT IN connector The CONT IN connector is used for connecting a dedicated RCU-41A or facilitating synchronized operation of multiple EDX-100A units (scheduled to be enabled).
- (3) CONT OUT connector The CONT OUT connector is used for facilitating the synchronized operation of multiple EDX-100A units (scheduled to be enabled).
- (4) LAN connector A LAN connector.

- (5) Power-supply fuse Power supply fuse ($\phi 5 \times 20$ mm)
- | | |
|---------------|--------|
| EDX-100A-1(H) | 3.15 A |
| EDX-100A-2(H) | 4 A |
| EDX-100A-4(H) | 6.3 A |
- (6) Power supply connector Power supply connector. Voltage range of this power supply connector is 10 to 18 VDC. For connector models and pin Nos., see “8. CONNECTOR PIN ASSIGNMENT.”
- (7) GND terminal Always connect a ground wire to the GND terminal.

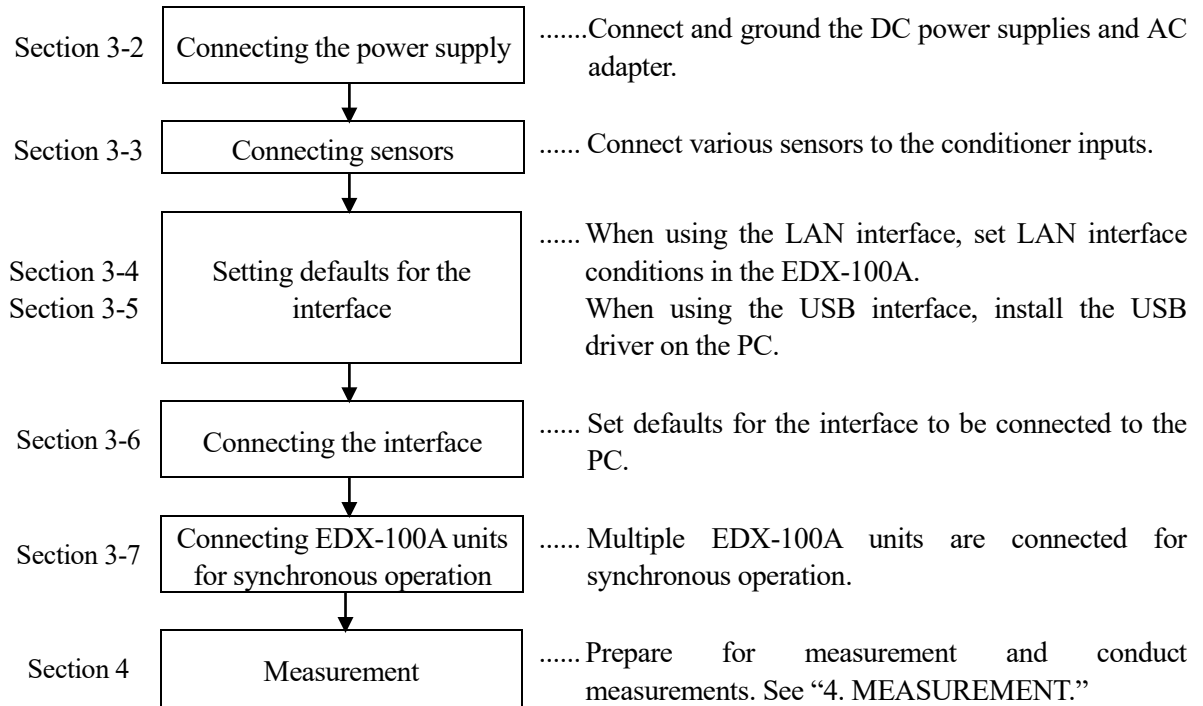
MEMO

The “GND” terminal is connected to the chassis and the common of the internal power supply.

3. INSTALLING THE EDX-100A

3-1 INSTALLATION PROCEDURE

This section describes the required steps used to install the EDX-100A and prepare for measurements. Use the following steps to complete the installation.



3-2 CONNECTING THE POWER SUPPLY

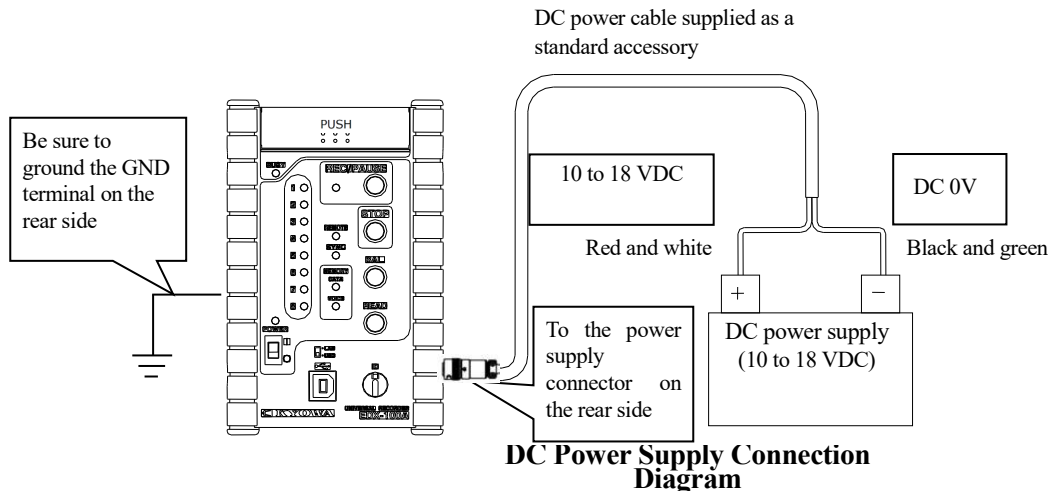
3-2-1 Connecting the DC Power Supply

Check the power supply voltage before connecting the DC power cable.

The operating power supply voltage range of the EDX-100A is 10 to 18 VDC. Always operate the EDX-100A within the specified voltage range. Also, be sure to ground the EDX-100A.

Supply power to the EDX-100A through the accessory DC power cable. Connect the power cable connector to the power supply connector located on the rear side of the EDX-100A. Connect the cable ends as follows:

[Red and white cable ends]	[10 VDC to 18 VDC]
[Black and green cable ends]	[0 VDC]



NOTE

- The negative side (-) of the DC power supply is electrically isolated from the "EDX-100A chassis" and "GND" terminal. (Withstand voltage: 250 VAC for 1 minute)
- When using an automotive battery as the DC power supply, ensure that the negative side of the battery is connected to the vehicle body.
- When a car battery is used as the DC power supply, the power supply voltage may temporarily drop and EDX-100A operation may become unstable because of the cell starter or other reasons. Take appropriate measures.
- The EDX-100 should never be connected to the power supply if the power supply voltage is outside the range specified above, or if the positive and negative sides of the power supply are connected in reverse.

MEMO

In the case of momentary power loss, in some cases only the POWER LED lights up and the buzzer may continue to issue a "beep, beep" sound. At this time, the power can be recovered by taking the following steps: Turn OFF the POWER switch once, check that the DC power supply voltage is stable between 10 to 18 volts and then, turn ON the POWER switch once again.

3-2-2 Connecting The AC Adapter

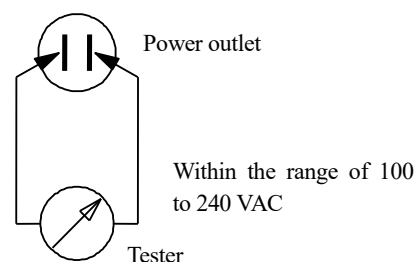
Connect the optional AC adapter to the power-supply connector located on the rear of the EDX-100A to supply power.

Check the power supply voltage before connecting the power cable of the AC adapter to the AC power outlet. The operating power supply voltage range for the AD adapter is 100 to 240 VAC. Always use the AC adapter within the specified voltage range. Also, be sure to ground the EDX-100A.

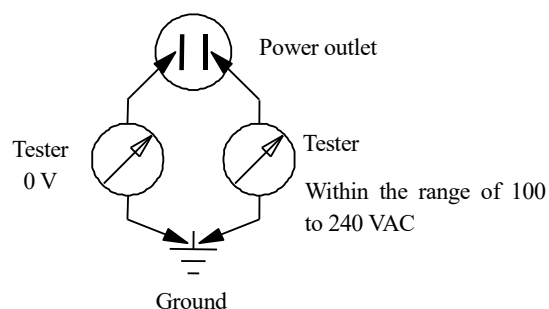
The EDX-100A should never be connected to the power supply if the power supply voltage is outside the voltage range specified above or if the voltage potentials of the terminals for the power supply exceed the level of power supply voltage relative to the ground. Doing so will cause accidents and damage to the EDX-100A.

The power supply voltage should be checked according to the procedure described below.

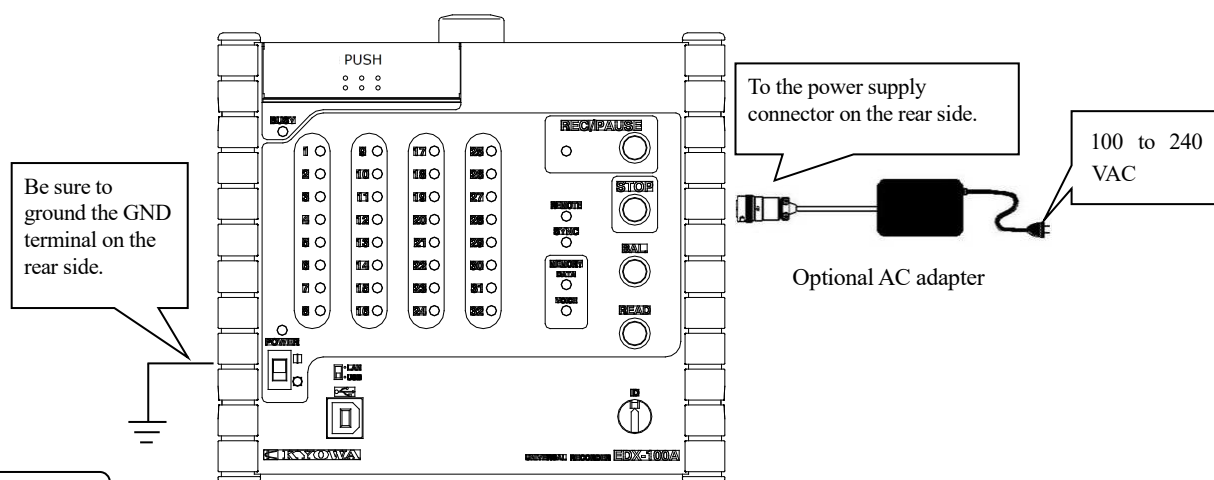
- (1) Use the tester to measure the voltage between the AC power outlet terminals and ensure that the voltage is within the range of 100 VAC to 240 VAC.



- (2) Use the testers to measure the voltage levels between the ground and each of the AC power outlet terminals to ensure that one voltage level is 0 V and the other is within the range of 100 to 240 VAC.



- (3) On the site where induction motors, electric welders and other devices that generate noise are used, power supply conditions may be deteriorated due to excessive noise in such environments. Use an Isolation transformer (Optional: UPT-300BR) or a commercially available noise cut transformer to prevent noise.



NOTE

- Be sure to ground the “GND” terminal. Failure to do so will pose a risk of electric shock, degrade performance and cause damage to the EDX-100A.

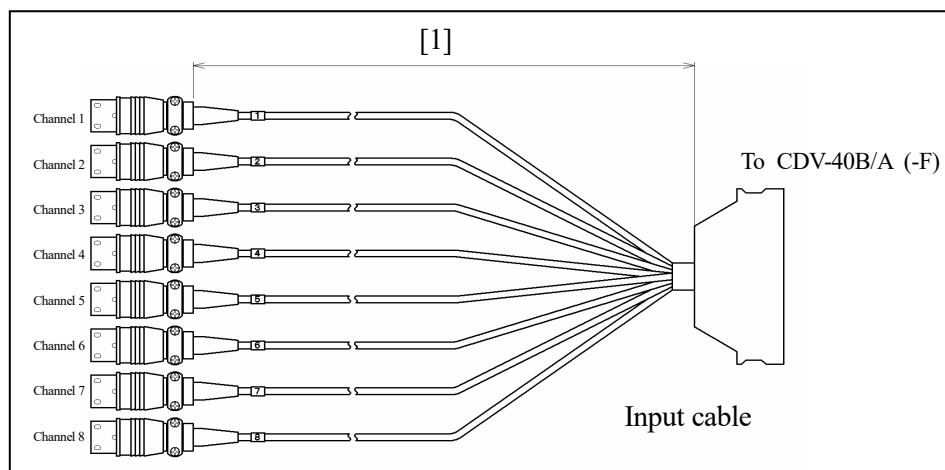
3-3 CONNECTING SENSORS

Before connecting sensors, do not forget to turn OFF the EDX-100A. When connecting conditioner cards other than the CDV-40B/A (-F), see the instruction manual for applicable sensors.

This section explains how to connect sensors to the Strain/Voltage Measurement Card CDV-40B/A (-F).

Dedicated input cables (Optional) are used to connect sensors to the CDV-40B/A (-F). The dedicated input cables shown in the table below are available:

Item	Model	Cable length (Figure [1])
Input cable	U-39	1.0 m

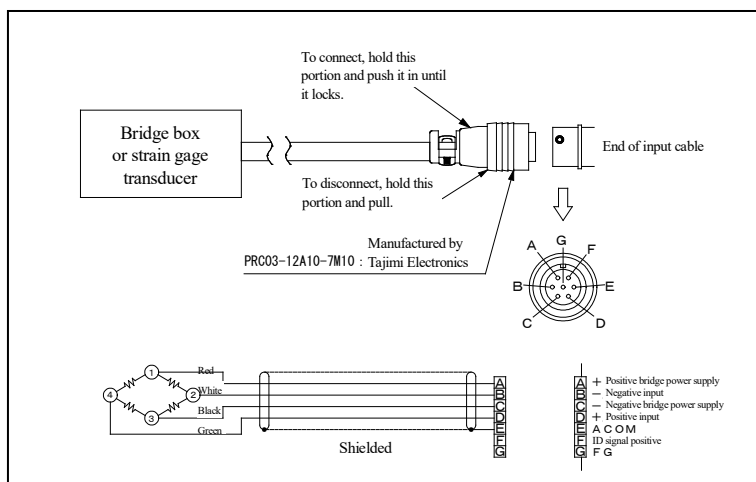


The CDV-40B/A (-F) is capable of performing strain measurement and voltage measurement. The inputs should be connected as described below:

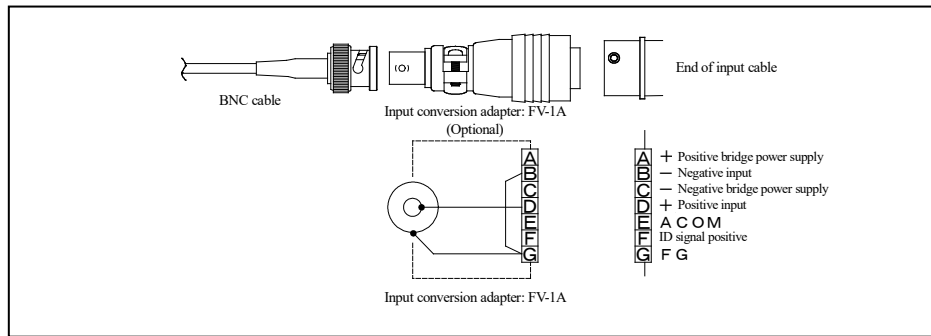
(1) When using a strain gage or strain gage transducer

When measuring the output of the strain gage or strain gage transducer, connect a bridge box or strain gage transducer as shown in the figure at right.

Before recording data, select the strain mode and monitor the noise. If excessive noise is detected, ground the ground terminal of the bridge box.



(2) When applying an input voltage



When measuring voltage, connect the FV-1A input conversion adapter (Optional) to a quick mating connector with the BNC connector. Select the voltage mode to perform monitoring. If excessive noise exists, connect the negative side of the voltage signal source to the GND terminal of the EDX-100A.

NOTE

- The F terminal of each channel input of the CDV-40B/A (-F) is intended for sensor ID signals. Connecting any other signal to this terminal may prevent the EDX-100A from recognizing all conditioners installed in the EDX-100A. In case the EDX-100A can not recognize the conditioners, the CH LED of the EDX-100A would not light up and no measurement is made.
- Strain generators: CAB-120D, 350D and WDS-10 cannot be used because the F and A terminals are short-circuited. In addition, to connect a remote sensing transducer, use cables N81 to N85.
- Be sure to ground the “GND” terminal. Failure to do so will pose the risk of electric shock, degrade performance and cause damage to the EDX-100A.
- To compensate the change in sensitivity caused by the bridge resistance of the strain gage, perform internal sensitivity compensation prior to measurement.
(See “5. SETTING CH CONDITION” in the DCS-100A INSTRUCTION MANUAL for EDX-100A Operation.)
For the input cable, use a 1m long U-39 cable.
For internal sensitivity compensation, the result is multiplied internally by a coefficient factor by considering bridge resistance of 350 Ω and the use of the U-39 input cable as reference.
- When measuring voltage, if a conditioner card is newly installed or the card slot is changed, in order to compensate the internal zero point, perform internal sensitivity compensation prior to measurement.

WARNING

● Maximum Input Voltage Range for Measurement

Do not apply an input voltage exceeding the range specified for the CDV-40B/A (-F). Doing so will pose a risk of electric shock, degrade performance and cause damage to the EDX-100A.

Take the following precautions when measuring the DC voltage of a battery, power supply or the like.

- (1) Use a tester or the like to measure the voltage between negative sides of the DC voltage to be measured in order to ensure that the voltage is approximately 0 V.
- (2) Check that the voltage between the negative side of the DC voltage to be measured and the GND terminal of the EDX-100A is approximately 0 V.
- (3) When connecting an input, take precautions so that the positive and negative sides are correctly connected.
- (4) Input voltage limits of the CDV-40B/A (-F) are ± 10 V. Do not apply a voltage exceeding the said range.

Failure to comply with the above precautions may result in short circuit of the signal source (e.g. the DC power supply) to be measured in the CDV-40B/A (-F), thus causing damage to the EDX-100A a fire hazard.

3-4 LAN INTERFACE DEFAULT SETTINGS

To control the EDX-100A via the LAN interface, it is necessary to set the IP address, subnet mask, etc. for the EDX-100A.

- How to set the IP address by using the CF card

Set the LAN interface conditions by creating a LAN interface condition file (file name: **EDX100A.IP**) in the CF card and insert the CF card into the EDX-100A to let it read and set the LAN interface conditions. Details of the determined file are described below.

File name: **EDX100A.IP** (The file name is fixed.)

```
[EDX-100A]   
IP_ADDRESS=192.168.111.111   
SUBNET_MASK=255.255.255.0   
DEFAULT_GATEWAY=0.0.0.0 
```

Example of File Content

(Step 1) Create the above described file using Notepad or other editor softwares, and save it with a file name [**EDX100A.IP**] in the [**Root Folder**] of the CF card.

[Precautions in Creating the **EDX100A.IP**]

- Ask the Network Manager for the appropriate values of the IP address, subnet mask and default gateway, which are underlined with a wavy line in the above figure.
- Set the IP address with **192.168.111** portion same as, and **XXX** portion different from the IP address of the EDX-100A. In addition, set the IP address of the PC in the same manner.
- All alphanumeric characters should be entered in capital letters without spaces or tabs.
- After creating a file with the editor software, always check the file name on Explorer. The file name should be “**EDX100A.IP**”; if not, change the name to “**EDX100A.IP**.”
-  in the box above indicates the line feed code (0x0d 0x0a).

(Step 2) With the power OFF, insert the CF card on which the above file is saved into the EDX-100A.

(Step 3) Turn ON the power while pressing and holding the READ switch on the front panel.

(Step 4) Press and hold the READ switch, and wait a few moments. If you hear the buzzer issuing a “beep, beep, bip, bip, bip” sound, it means the setup is complete. Release the READ switch.

(Step 5) Turn OFF the power, wait for about 5 seconds, then turn ON the power once again to enable settings for the LAN interface.

MEMO

If the LAN conditions are not set successfully, the buzzer will continue to issue a “beep, beep, ...” sound in step 4. If this case, check the content of “**EDX100A.IP**” in the CF card, make necessary corrections and start (from step 1) once again.

[Factory Default of LAN Settings of the EDX-100A]

IP address	192.168.100.100
Subnet mask	255.255.255.0
Default gateway	0.0.0.0

3-5 USB DEVICE DRIVER SET-UP

To control the EDX-100A via the USB interface, it is necessary to setup the USB device driver for the EDX-100A in the PC.

NOTE

- When setting up the USB device driver, log on to the Administrator account (e.g. Administrator).
- Before connecting the EDX-100A and PC via the USB cable, be sure to setup the USB device driver.

- For using the DCS-100A
 - (1) When setting up the DCS-100A, be sure to setup the USB device driver for the EDX-100A at the same time.
For details, see the DCS-100A INSTRUCTION MANUAL For set-up.
 - (2) After turning ON the EDX-100A, connect the EDX-100A and PC via the USB cable.
- For creating the control software
 - (1) Insert the accessory DVD into the PC.
 - (2) Execute the "\\UsbDriver\\KYOWA_USB_****.exe" in the DVD.
Note that *** indicates the version of the setup file for the USB device driver.
 - (3) Setup the USB device driver by following the instructions on the window.
For details, see the DCS-100A INSTRUCTION MANUAL For USB driver set-up.
 - (4) After turning ON the EDX-100A, connect the EDX-100A and PC via the USB cable.

MEMO

After setting up the USB device driver, connect the EDX-100A and PC via an USB cable for installing the USB device driver automatically.

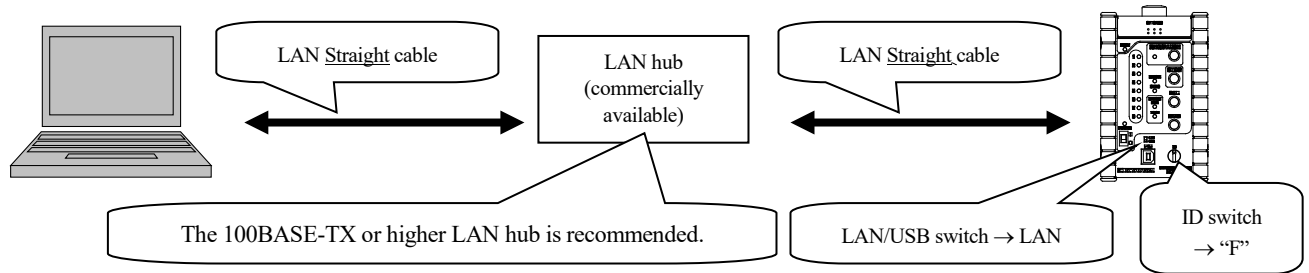
Depending on the OS (operating system), the "Wizard" window may appear to help you setup the USB device driver. For details, see the DCS-100A INSTRUCTION MANUAL For USB driver set-up.

3-6 CONNECTING INTERFACE

This section describes details of interface connection diagram.

3-6-1 LAN Connection: Connecting by Installing a Hub Between EDX-100A and the PC

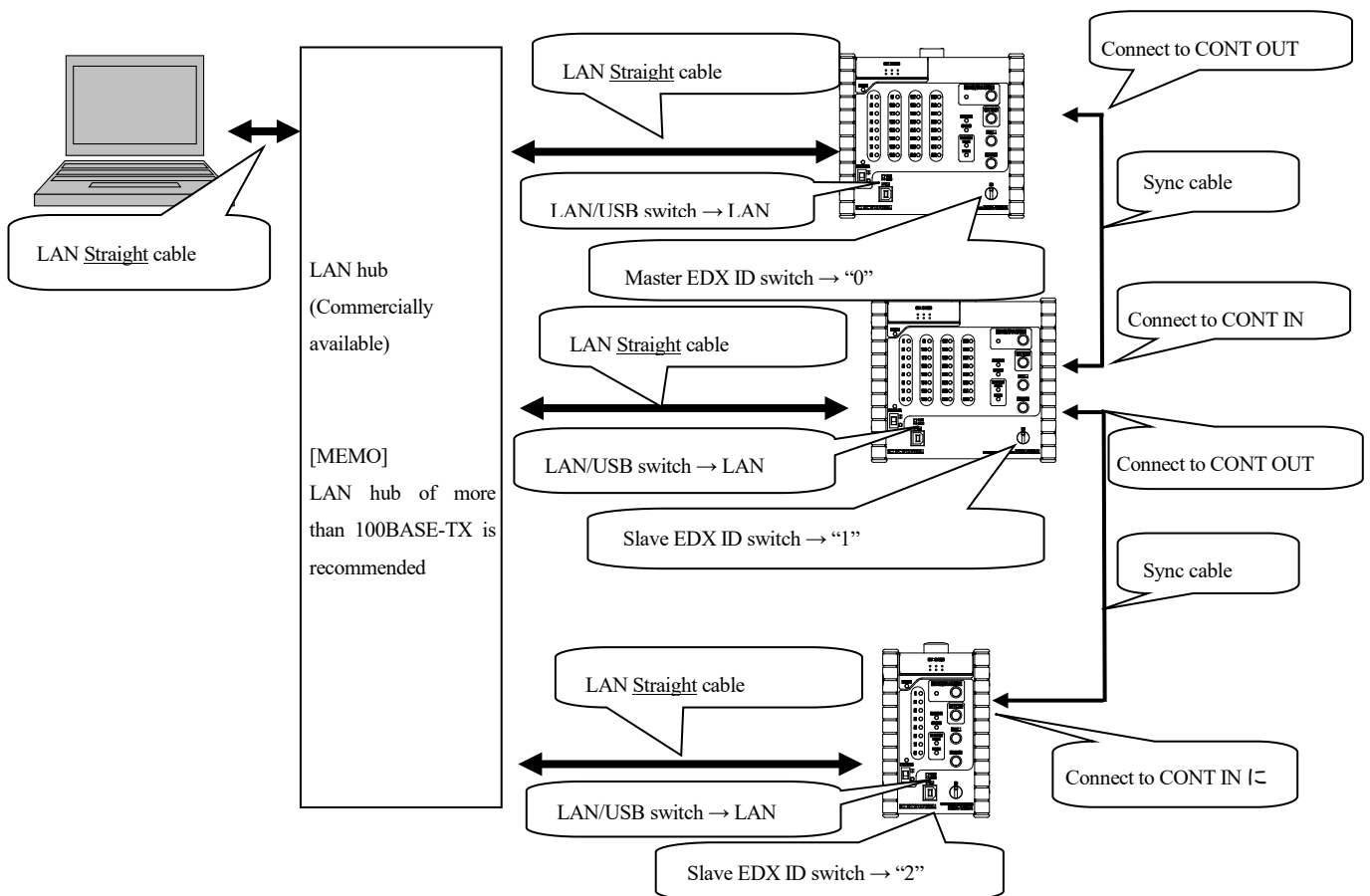
Connection diagram for the stand-alone EDX-100A is described in the following.



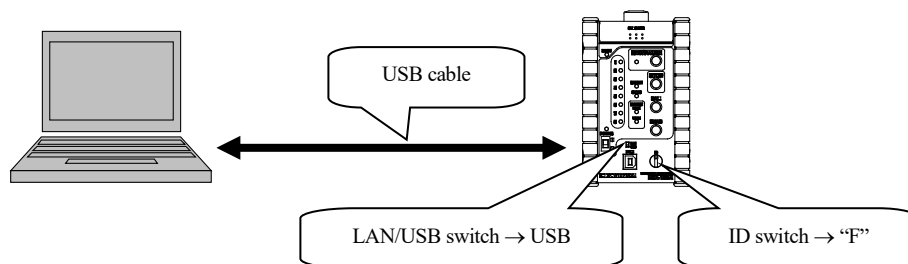
NOTE

- When communication error frequently occurs by directing connecting to the PC, connect by installing a LAN hub of more than 100BASE-TX.
- Do not connect with a wireless LAN.

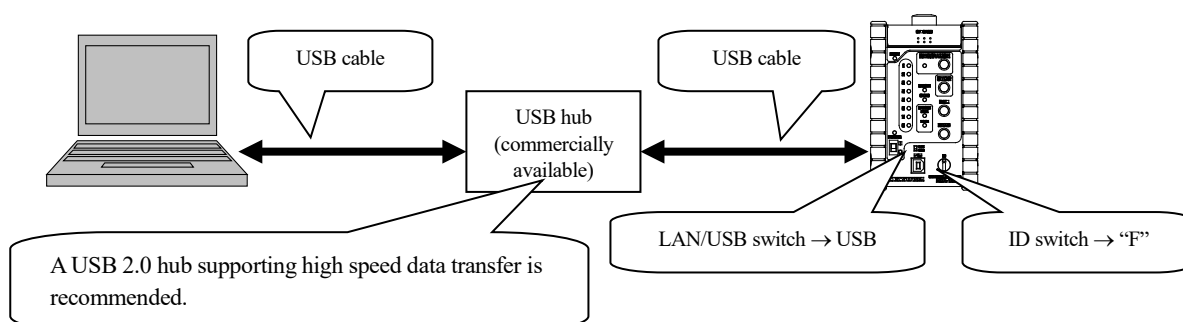
Connection diagram for synchronous operation is described in the following.



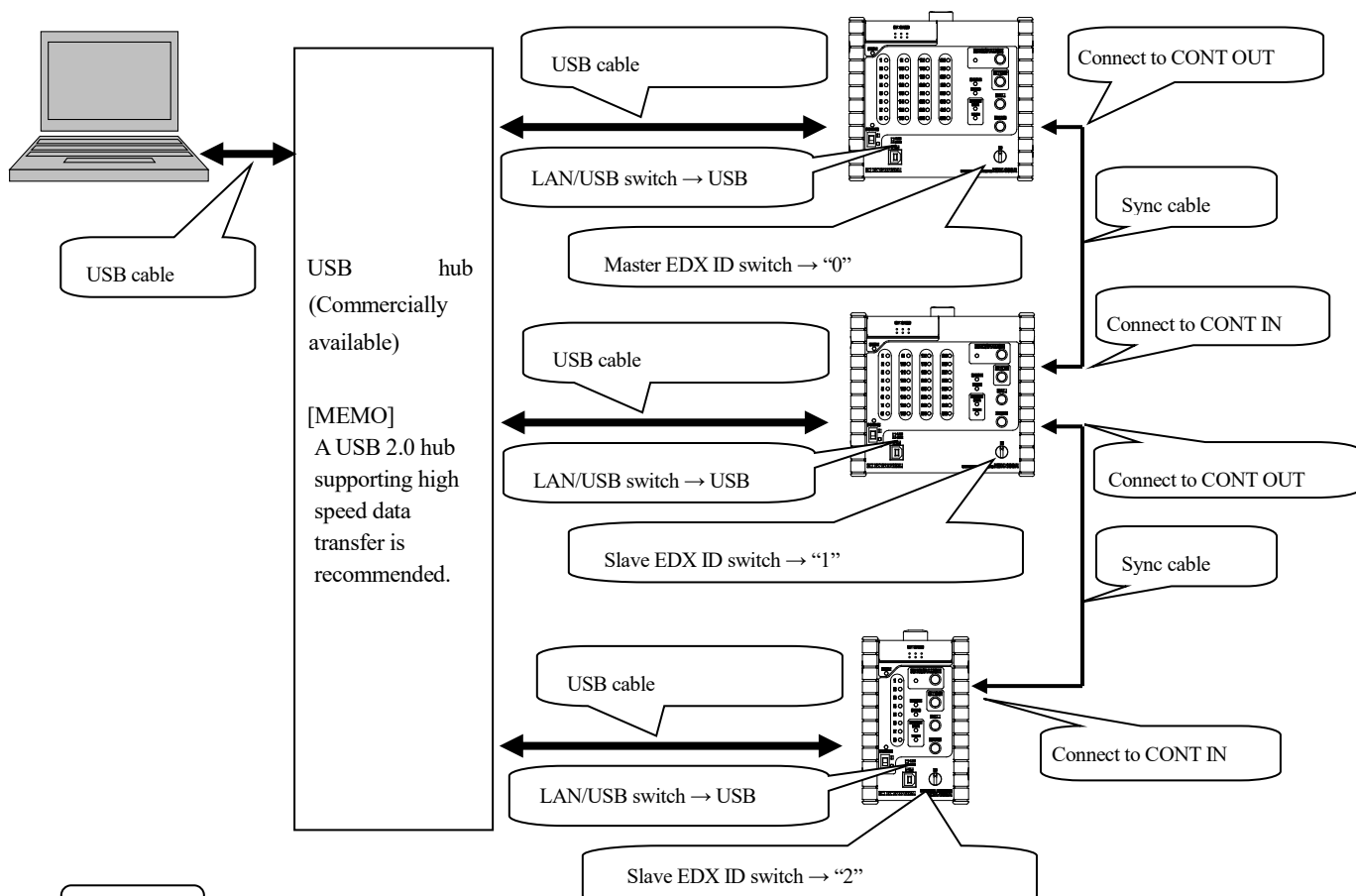
3-6-2 USB Connection: Directly Connected to the PC



3-6-3 USB Connection: Connecting by Installing a Hub Between EDX-100A and the PC



Connection diagram for synchronous operation is described in the following.



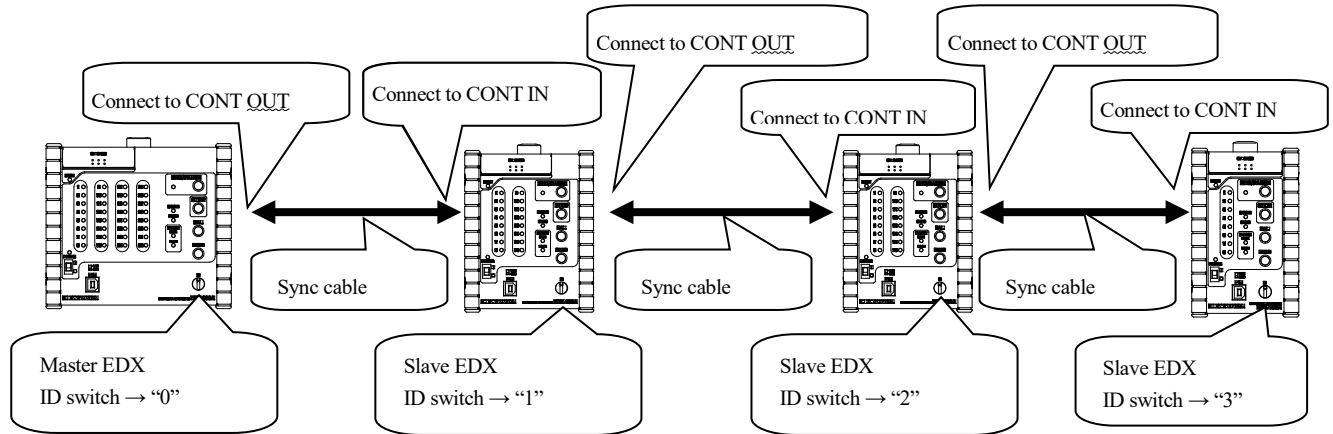
NOTE

- No synchronous operations is available by using the USB interface on the PC together with additionally installed USB interface board.

3-7 CONNECTING MULTIPLE EDX-100A UNITS FOR SYNCHRONOUS OPERATION

Synchronous operation is a function that conducts measurement by multiple EDX-100A units at the same timing (sampling clock) and records the measured data of up to 256 channels at the same time. It is effective for recording data of more than 32 channels.

When conducting the synchronous operation, connect the EDX-100A units using synchronous cables N-95 (Optional) as described in the following.



Always set the ID switch of the head EDX-100A to master [ID = "0"] and the rest of the EDX-100A units to [ID = "1 to 7"] by taking care not to set the same ID No. In addition, assign the ID switch Nos. in due order from "0" as described in the above figure.

Change the ID switch with EDX-100A power turned OFF. Then, the changed ID switch is enabled with the EDX-100A power turned ON. Note that changing the ID switch with the power ON is not enabled

MEMO

Precautions on setting conditions for synchronous operation are described in the following.

- 1) The number of EDX-100A units that can be connected for synchronous operation is total 8 irrespective of the number of slots on the EDX-100A main body. (Master: 1, Slave: 7)
- 2) According to setting conditions of all the synchronous cable connected EDX-100A units, recordable conditions are defined for synchronous operation. Especially, carefully note the following 2 items.
 - (1) When using antialiasing filter mounted conditioners and setting the Low Pass Filter to "AUTO," it is not available to set the sampling frequency to less than 100 Hz. If the Low Pass Filter is set to other than "AUTO," it can be set to less than 100 Hz.
 - (2) When it is set to record data by CAN card, sampling frequency shall become maximum 1 kHz. To set the sampling frequency to more than 1 kHz, turn OFF the CAN card recording.
- 3) Trigger setting is available only by the master EDX [ID="0"] and not by the slave EDX.
- 4) Sampling clock is transmitted from the master EDX to the slave EDX.
- 5) DPM-42B/A (-F) and DPM-42B-I (-F) carrier is transmitted from the master EDX to the slave EDX.

NOTE

- During synchronous operation, never turn OFF the synchronous cable connected EDX-100A units. If any EDX-100A power turns OFF during the synchronous operation, no data is properly recorded.

4. MEASUREMENT

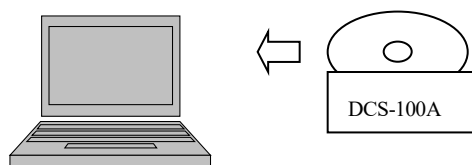
4-1 TYPES OF MEASUREMENT

The EDX-100A is capable of online measurement as well as offline measurement.

- Online measurement In this measuring method, EDX-100A and the PC are connected via the LAN or USB interface, and data is recorded using the control software (DCS-100A) or the software developed by the user.
- Offline measurement In this measuring method, the measuring conditions for the EDX-100A are set using the PC or a CF card, and data is recorded by controlling the switches on the front panel of the EDX-100A.

4-2 ONLINE MEASUREMENT PROCEDURE

- (1) **Install the control software.**
(Prior to the first use only)
- Install the control software (DCS-100A) into the PC you want to use. For the installation procedure, see “Setup for DCS-100A.”

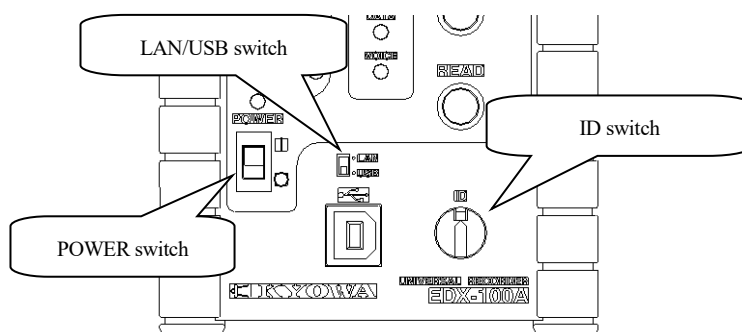


- (2) **Setup**
- Connect the power supply
 - Connect sensors
 - Set the defaults for the interface
 - Connect the interface

Set up the EDX-100A. For details, see “3.INSTALLING THE EDX-100A.” Especially when setting defaults for the interface, read “3-4 LAN INTERFACE DEFAULT SETTINGS” thoroughly and carefully set required conditions.

Next, connect EDX-100A and the PC by referring to “3-6 CONNECTING INTERFACE.”

Be sure to set the ID switch and LAN/USB switch located on the front panel of the EDX-100A according to the conditions in use.



NOTE

The power must be turned OFF when changing the LAN/USB switch from LAN to USB or vice versa. Changing the LAN/USB switch while the power is ON will not change the interface for the EDX-100A. To enable the interface that has been selected with the LAN/USB switch, turn OFF the power, wait at least 5 seconds and then, turn ON the power once again.

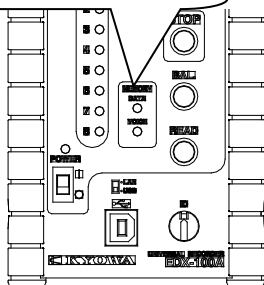
- (3) Turn ON the EDX-100A and the PC.

Turn ON the EDX-100A and the PC. If the power switch is turned ON, all LEDs on the front panel other than the POWER LED light up in due order from green → red → orange. Then, insert the CF card into the EDX-100A.

NOTE

Open the latching lid on the front panel, and securely insert the CF card with the card ejector (button) pressed in. When the CF card is properly inserted, the MEMORY DATA LED lights up and a buzzer sound “bip” is issued. For the LED colors and corresponding residual capacities, see Table 1-3 in “2-1 FRONT PANEL.”

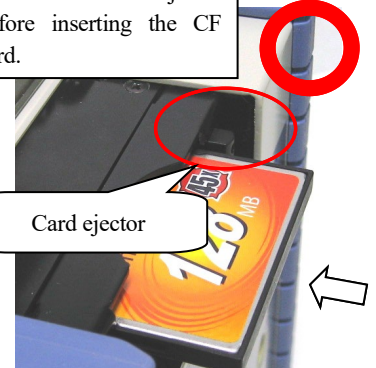
MEMORY DATA LED



Bad example:
The card ejector is
protruding.



Press in the card ejector
before inserting the CF
card.



- (4) Set measuring conditions.

Startup the DCS-100A, and set channel conditions, measuring mode, sampling frequency, etc. For how to use the DCS-100A, see DCS-100A INSTRUCTION MANUAL for EDX-100A Operation.

NOTE

In steps (5) to (9), monitor measurement and data recording may become impossible under certain conditions. Therefore, leave the CF card inserted when performing those steps.

- (5) Monitor and measure using the PC, and check the input.

Perform balancing using the DCS-100A, if necessary. If excessive noise is present, set a low pass filter and check the grounding. See “3-3 CONNECTING SENSORS.”

- (6) Start data recording.

Start data recording using the DCS-100A. The obtained data is written into the CF card.

- (7) Stop data recording.

Stop data recording using the DCS-100A.

- (8) Collect data.

Collect the recorded data from the EDX-100A through the DCS-100A.

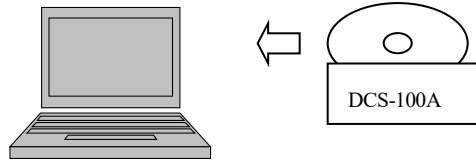
- (9) Check and analyze the waveform of the recorded data.

Check the waveform of the recorded data via the DCS-100A. The recorded data can be checked and analyzed using the DAS-200A: optional or DIAdem: optional.

4-3 OFFLINE MEASUREMENT PROCEDURE

- (1) Install the control software.
(Prior to the first use only)

Install the DCS-100A into the PC you want to use. For the installation procedure, see “Setup for DCS-100A.”



- (2) Setup
- Connect the power supply
 - Connect sensors
 - Set the defaults for the interface
 - Connect the interface

Set up the EDX-100A. For details see “3. INSTALLING THE EDX-100A.” Especially when setting defaults for the interface, read “3-4 LAN INTERFACE DEFAULT SETTINGS” thoroughly and carefully set required conditions.

- (3) Create an EDX-100A measuring condition file using the DCS-100A.

Startup the DCS-100A, create a measuring condition file on the PC and save it on the CF card.

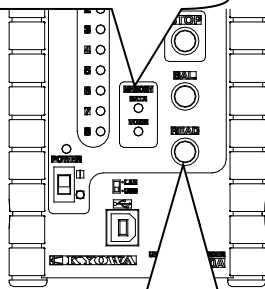
- (4) Set measuring conditions.
(The determined measuring conditions remain in memory even after the power is turned OFF.)

Turn ON the EDX-100A, insert the CF card with measuring condition file to the EDX-100A, and press the READ switch to set the measuring conditions. Next, insert a CF card for saving data.

NOTE

Open the latching lid on the front panel and securely insert the CF card with the card ejector (button) pressed in. When the CF card is properly inserted, the MEMORY DATA LED lights up and the buzzer sound “bip” is issued. For the LED colors and corresponding residual capacities, see Table 1-3 in “2-1 FRONT PANEL.”

MEMORY DATA LED



Insert the CF card, close the cover and press the READ switch. The buzzer sound “bip” is issued, and the setting of measuring conditions will be completed within 1 second.

Bad example:
The card ejector is protruding



Card ejector

Press in the card ejector before inserting the CF card.



Card ejector

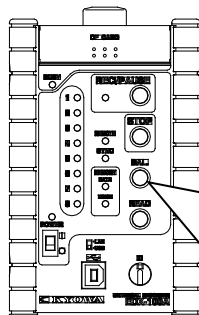
NOTE

If the BUSY LED lights up red after the READ switch is pressed, it means the subsequent measurement tasks cannot be performed because there is no measuring condition file in the CF card or an error exists in the file content. At this time, create a new condition file with the DCS-100A, save it in the CF card and follow the procedure in step 4 once again.

The name of the measuring condition file is **EDX100A.SET** (fixed).

(5) Check input status with the CH LED.

Press the BAL. switch for more than 1 second to perform balancing, if necessary. Check the input status with the CH LED. For details of the CH LED, see the appropriate table in “2-1 FRONT PANEL.” For details of the input, see “3-1 CONNECTING SENSORS.”



In case when a sensor is connected for the first time or when the CH LED lights up red, press the BAL. switch for more than 1 second to perform balancing. During balancing, the CH LED lights up orange. If the CH LED lights up orange and starts flashing orange, it means balancing is not successful. At this time, connect the PC and check the cause of the problem.

(6) Start data recording.

Press the REC/PAUSE switch to start data recording. The red REC/PAUSE LED lights up while data recording is in progress. Pressing the REC/PAUSE switch once again causes the REC/PAUSE LED to flash red and to pause the operation (pause data recording). For details of LED conditions, see the applicable table in “2-1 FRONT PANEL.”

NOTE

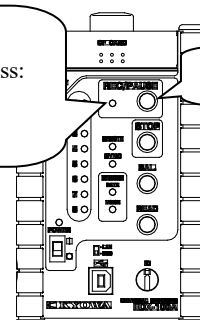
Be sure that the CF card is inserted before starting data recording. The recorded data is written into the CF card.

REC/PAUSE LED

Data recording in progress:

Lights up red

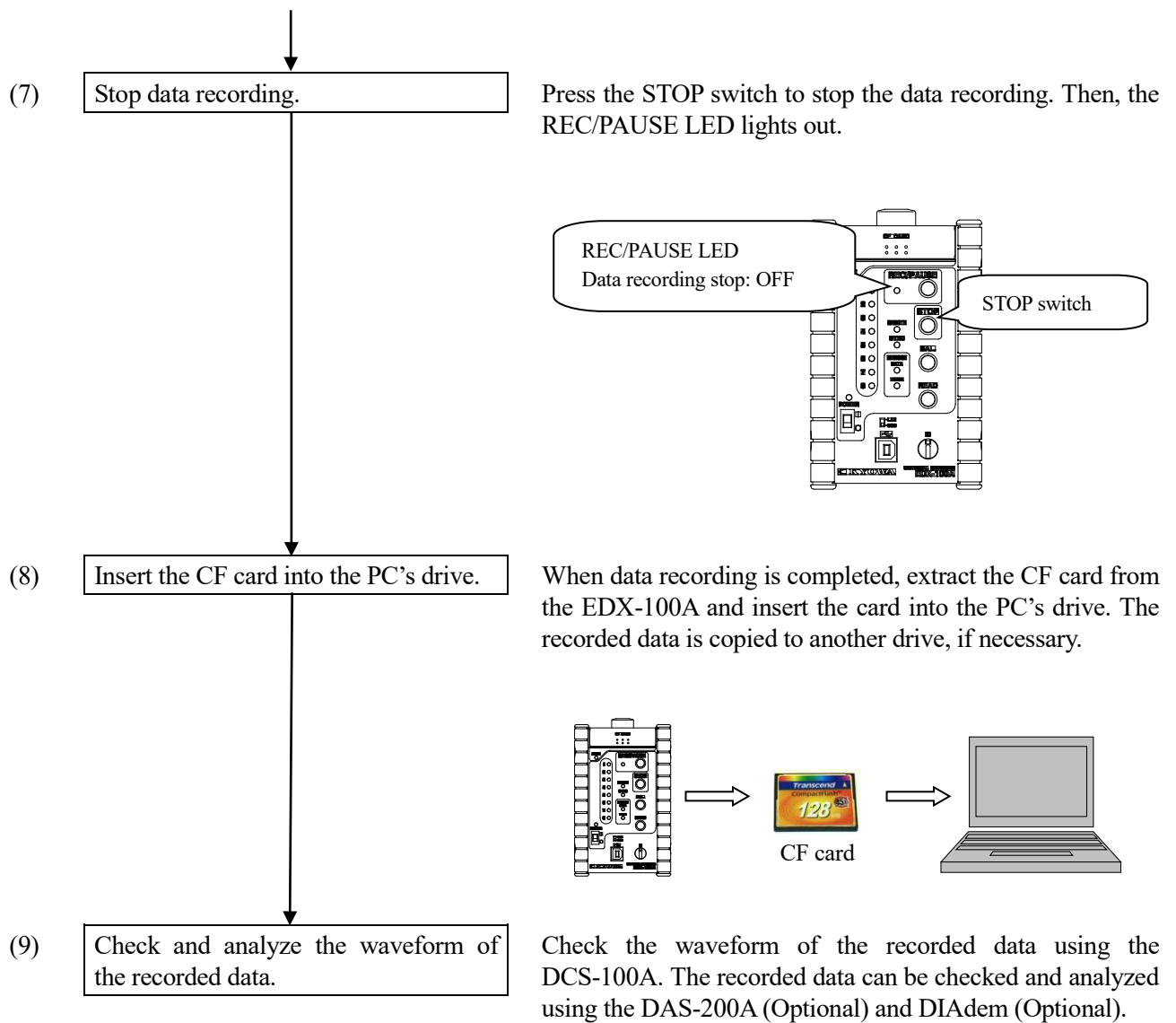
Pausing: Flashes red



REC/PAUSE switch

MEMO

To record voice memo, use the optional RCU-41A.



4-4 RECORDING VOICE MEMO

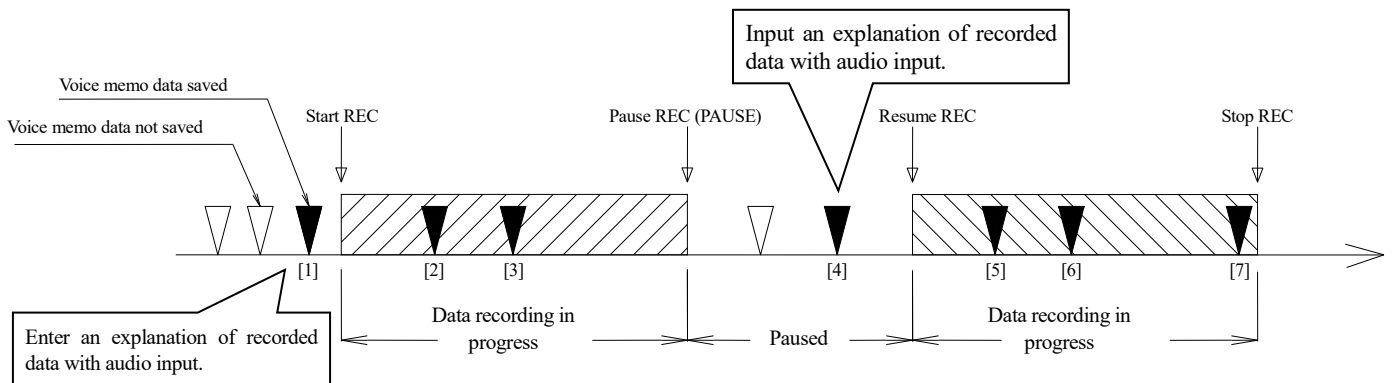
Voice memo can be recorded using the optional RCU-41A.

Voice memo can be recorded while recording data (REC), before starting data recording or while pausing recording.

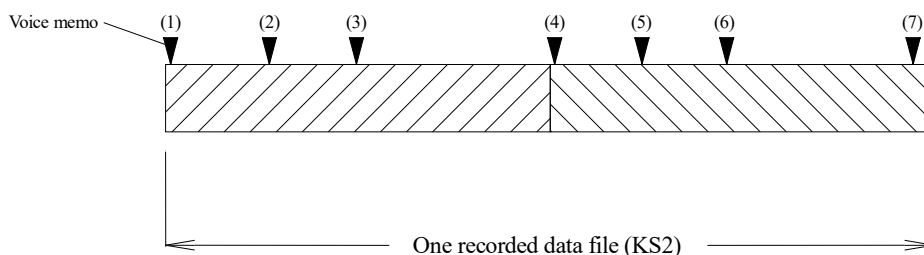
- During data recording: Voice memo is recorded while the VOICE MEMO switch is being pressed.
- Before starting data recording: Voice memo is recorded while the VOICE MEMO switch is being pressed, but only the voice data recorded immediately before starting data recording is saved in the data file.

Triangular marks ▽ and ▼ in the figure below indicate a point when voice memos are recorded. As shown in the figure, voice memos recorded during data recording are saved into a data file (marked with ▼), but among voice memos recorded when data recording is not in progress, only those immediately before a data recording are saved into the data file. (Voice memos marked with ▽ are not saved in the data file.)

This function makes it possible to store the voice memo recorded immediately before data recording. At items [1] and [4] in the following figure, an “explanation” (e.g. purpose, conditions, etc.) of the data to be recorded can be saved as voice memo (instead of entering detailed memo of the recorded data file from the keyboard).



If data and voice memos are recorded as shown above, the data file (KS2 file) will be as shown below:



Voice memos can be recorded up to either of the following capacity and continues recording until either item (1) or (2) is satisfied.

- 1) Total recording time of 1,048 seconds (approx. 17 minutes)
- 2) Total recording times of 255 times

NOTE

- Unlike the EDX-2000A, data recording (REC) does not start by pressing the VOICE MEMO switch.
- The EDX-100A cannot playback the recorded voice memo solely by itself. Use the DAS-200A (optional).

4-5 TURNING ON/OFF THE POWER

Flip up the POWER switch on the EDX-100A front panel to the “|” side to turn ON and, to the “○” side to turn OFF the EDX-100A. When the power is ON, the POWER LED on the front panel lights up green.

If the POWER LED is flashing red, it means that the DC power supply voltage applied to the power supply connector is less than 11 V. In case when a battery is connected, replace the battery.

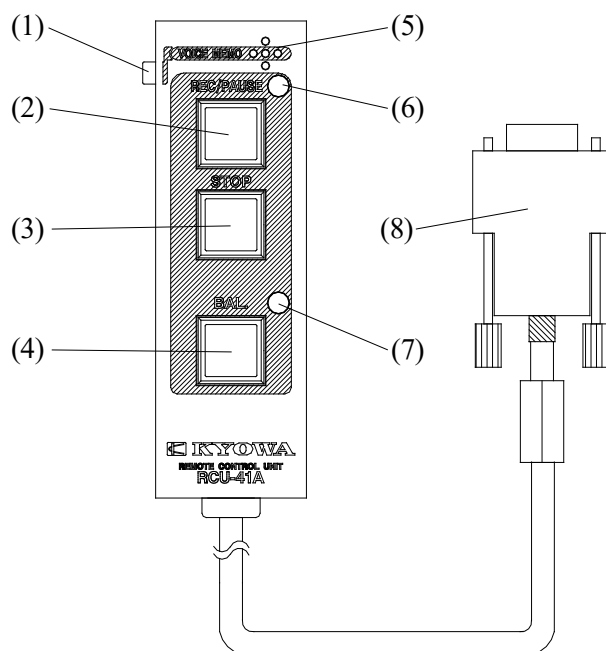
After the completion of measurement, turn OFF the power switch of the EDX-100A.

NOTE

1. Never turn OFF the power while recording data.
Doing so may invalidate the data being recorded. In some cases, data in the CF card or the card itself may be damaged.
2. Never turn OFF the EDX-100A while collecting data via the LAN or USB interface. Doing so may damage data in the CF card or the card itself.
When the LAN or USB interface is used for collecting data, you cannot see whether data is being collected simply through a visual check of the main unit. Therefore, before turning OFF the EDX-100A, use the DCS-100A to check that data is not being collected.
3. If the possibility exists that power failure may occur, be sure to use an uninterruptible power supply unit.
4. When using an external battery, use the one with sufficient capacity to cover the length of measuring time. For details on the current consumption of the EDX-100A, see “9-1 OVERALL SPECIFICATIONS.”
5. After turning OFF the EDX-100A, wait at least 5 seconds before turning ON the power once again.
6. To ensure accurate measurement, turn ON the power switch and warm up the unit for about 30 minutes before starting the measurement.

5. RCU-41A REMOTE CONTROL UNIT

Parts names and various functions of the RCU-41A are described below:



- | | |
|-----------------------------|---|
| (1) VOICE MEMO switch | Talking to the microphone (MIC) (5) while pressing this switch lets you record the voice memo. See "4-4 RECORDING VOICE MEMO." |
| (2) REC/PAUSE switch | The REC/PAUSE switch has the same functions as that of the "REC/PAUSE" on the main unit.
Pressing this switch while recording data pauses the recording and pressing this switch while pausing starts recording data again. Data obtained while pausing recording is not saved in the memory. To stop the data recording, press the STOP switch. |
| (3) STOP switch | The STOP switch has the same functions as that of the "STOP" switch on the main unit. Pressing the STOP switch while recording or pausing data stops the data recording. |
| (4) BAL. switch | The BAL. switch has the same functions as that of the "BAL." switch on the main unit. Press this BAL switch for more than 1 second to perform balancing. |
| (5) MIC | A built-in microphone is provided. During voice recording, keep a distance of approximately 10 cm from the microphone. |
| (6) REC/PAUSE LED | This LED indicates the state of data recording.
While online monitor measurement: The LED slowly flashes red.
While pausing (PAUSE): The LED flashes red.
While recording data (REC): The LED lights up red.
Other than the above: The LED lights out. |
| (7) BAL. LED | This LED indicates the state of balancing.
While balancing: The LED lights up orange.
Other than balancing: The LED lights out. |
| (8) Connector | Connect the connector to the connector (CONT IN) for the RCU-41A on the rear panel of the main unit. |

NOTE

- Unlike the EDX-2000A, data recording (REC) does not start by pressing the VOICE MEMO switch.
- Before connecting the RCU-41A, do not forget to turn OFF the EDX-100A.

MEMO

Use the DAS-200A (optional) to playback the recorded voice data.

6. TROUBLESHOOTING BEFORE CALLING FOR REPAIR SERVICE

In the event the EDX-2000A would not operate as expected or in a stable manner, trace back the factor(s) that may be causing such condition before concluding that the system has failed. Items to be checked and countermeasures to be taken for various phenomena are described below. If the problem persists even after corrective action is taken, contact KYOWA or our representative.

In addition, if the system is damaged caused by methods other than as specified in this instruction manual, or if the user has disassembled or modified the system, Kyowa Electronic Instrument Co. Ltd is not liable for offering any repair services.

6-1 TROUBLESHOOTING FOR THE MAIN UNIT EDX-100A

Phenomenon	Check Items and/or Countermeasures
When the AC adapter is used, power is not supplied to the main unit. The POWER LED would not light up.	• Does the AC power outlet have the specified voltage? Check the voltage using a tester or the like. See “3-2 CONNECTING THE POWER SUPPLY.” • Is the power cord securely connected?
When the DC power supply is used, power is not supplied to the main unit. The POWER LED would not light up.	• Does the DC power supply have the specified voltage? Check the voltage using a tester or the like. See “3-2 CONNECTING THE POWER SUPPLY.” • Is the power cord securely connected? • Is the power supply connected to the correct polarity (+/-)? • Has the DC fuse blown? A spare fuse for the DC power supply is provided in the main unit. If the fuse is blown, remove the cause of the problem before replacing. • Is the capacity of the DC power supply sufficient?
The POWER LED would not light up green.	• If the applied DC power supply voltage is less than 11 V, the POWER LED lights up red. If the applied voltage is approximately 11 V to 18 V, the POWER LED lights up green.
When the power is turned ON, the buzzer continues to beep and no operation is made.	• Check whether the ID switch on the front panel is set to “8, 9, B, C, D, E.” If it is set to “8, 9, B, C, D, E,” no proper operation is available. Setting the ID switch → turn OFF the power → wait 5 seconds → turn ON the power once again.
The BUSY LED lights up red and no measurement is available.	• Are measuring conditions properly set? ○ When offline, this state occurs after a measuring condition file is read with the READ switch. At this time, create a new EDX-100A measuring condition file using the DCS-100A, copy the file to the CF card and read with the READ switch. If the measuring conditions are properly set, the BUSY LED lights out. ○ When online, set measuring conditions on DCS-100A once again. If the measuring conditions are properly set, the BUSY LED lights out. • Did you replace the conditioner card? If the conditioner card is replaced, measuring conditions differs to cause the BUSY LED to light up. Set new measuring conditions once again. • Is the CF card properly inserted? If the CF card is not properly inserted, the MEMORY DATA LED on the front panel is turned OFF. Extract the CF card and insert it once again. • Is the residual capacity of the CF card sufficient? If the residual capacity of the CF card is not sufficient, the MEMORY DATA LED on the front panel lights up red or flashes red. Replace the CF card with enough capacity or delete files from the CF card to secure sufficient capacity. • The recorded data file No. in the CF card or the file No. may be 9999. Change the recorded data file name using the DCS-100A. See “11-1 NAME OF RECORDED DATA FILE.”

Phenomenon	Check Items and/or Countermeasures
Data recording would not start, pause or stop even if the “REC/PAUSE” or “STOP” switch is pressed.	• Is the BUSY LED lights up red? See “The BUSY LED lights up red and no measurement is available” on the previous page.
Balancing is not performed even if the “BAL.” switch is pressed for more than 1 second.	• Is the BUSY LED lights up red? See “The BUSY LED lights up red and no measurement is available.” In the previous page. • Are all the channels to be balanced set to OFF in Channel Conditions? Create a measuring condition file with the DCS-100A and use the READ switch for setup, or go online to make the setting directly.
Only the POWER LED lights up and the buzzer continues to issue a “beep-beep” sound.	• This state occurs in the event of a momentary power loss. At this time, the power can be restored by taking the following steps: Turn OFF the POWER switch once, check that the DC power-supply voltage is stable between 10 to 18 VDC, then turn ON the POWER switch once again.
The BUSY LED is flashing red.	• Service life of built-in backup battery is short. The used battery must be returned to KYOWA for replacement. Please contact us or our representatives.
The MEMORY DATA LED lights up red, flashing red, or lights out.	When ON: There is not enough residual capacity in the CF card for recording data. When flashing: There is not much residual capacity in the CF card for recording data. When OFF: No CF card is installed. Install the CF card. See Table 1-3 in “2-1 FRONT PANEL.”
The MEMORY VOICE LED lights up red, flashing or lights out.	When ON: There is not enough residual capacity in the CF card for recording voice data. When flashing: There is not much residual capacity in the CF card for recording voice data. When OFF: The EDX-100A is faulty. The faulty EDX-100A must be returned to KYOWA for repair. Contact us or our representatives. See Table 1-3 in “2-1 FRONT PANEL.”
The CH LED would not light up.	• Is the conditioner card properly inserted? See “6-2 TROUBLESHOOTING FOR THE CDV-40B/A (-F) STRAIN/VOLTAGE MEASUREMENT CARD.” • Is a card not applicable with the EDX-100A inserted? Only one CAN card can be used. The DAC-40A card cannot be used. • Are all the measurement ON/OFF parameters set to OFF in Channel Conditions? Create a measuring condition file using the DCS-100A and use the READ switch for setup, or go online to make the setting directly.
A size ‘0’ file exists in the CF card.	• When the power is turned OFF while recording data, a size ‘0’ file may be created in some cases. Never turn OFF the power while data recording is in progress. If a size ‘0’ file is found, be sure to format the CF card.
Measurement is interrupted, or the abnormal recorded data file is generated.	• Use the accessory CF card (128MB). If use other than accessories or the recommended CF card, there is that the measurement is interrupted, or the abnormal recorded data file is generated. When using the other than accessory CF card, please contact our business offices, or representatives.
When an attempt is made to reproduce the EDX-100A recording data file, a message “Failed to read data” is displayed.	• In some cases a size ‘0’ file is created when the power is turned OFF during data recording. <u>Note that, if the size of the recorded data file is not ‘0,’ you may be able to restore the file using the DAS-200A.</u> Restore the file with the DAS-200A. However, you cannot restore a voice file.

6-2 TROUBLESHOOTING FOR THE CDV-40B/A (-F) STRAIN/VOLTAGE MEASUREMENT CARD

Phenomenon	Check Items and/or Countermeasures
The CH LED would not light up even if the card is installed.	• See “The CH LED would not light up” in “6-1 TROUBLESHOOTING FOR THE MAIN UNIT EDX-100A.” • Extract the conditioner card and check whether or not connector pins on the other side of the panel is bent. If they are bent, correct the problem and install the card. Then, check the card model No. is displayed using the DCS-100A. If the same display still appears even after the problem is solved, contact KYOWA or our representatives.
A balance cannot be achieved.	• Is OFF selected for the Balance ON/OFF item in Channel Conditions? If “OK” would not appear even if “ON” is selected, it is assumed that no sensor is connected to the input, sensor is faulty or sensor input is unstable.
Cannot conduct balance or noise interference is exceeding.	• Is the GND terminal of the EDX-100A grounded? When using the strain gage, noise can be reduced by connecting the GND terminal of the EDX-100A to the test specimen to which the strain gage is attached. See “3-3 CONNECTING SENSORS.” Is there an inverter motor, machining equipment, welder or AC power supply for power systems placed near the input cable for the EDX-100A? At this time, set the input cable far apart from the power source. • A low pass filter can be provided to reduce noise. Set cutoff frequency of the low pass filter to about 2 to 5 times the frequency of the input signal. (Example: If the input is DC to 100 Hz, select a cutoff frequency of 300 Hz.) If input signals change abruptly, set the parameter to about 10 times the frequency of the input signal.

7. MAINTENANCE

7-1 MAINTENANCE DESCRIPTIONS

For the EDX-100A, the following items should be serviced for scheduled maintenance.

Maintenance service should be performed at the intervals specified below:

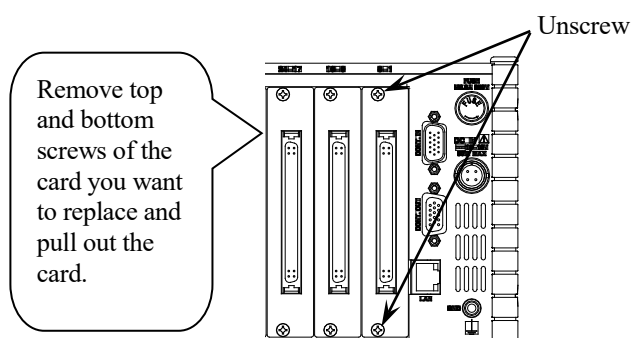
Item	Description	Service intervals
Replacement of built-in backup battery	Service life of a built-in backup battery is approximately 10 years. Replace or, battery capacity will deteriorate. The used battery must be returned to Kyowa Electronic Instruments for replacement.	Once in 10 years
Evaluation of accuracy of the built-in conditioner card	An annual maintenance inspection is recommended to ensure the accuracy of the built-in conditioner card. The conditioner card must be returned to Kyowa Electronic Instruments for the scheduled maintenance inspection.	Once a year

7-2 REPLACEMENT OF CONDITIONER CARD

To replace the conditioner, turn OFF the power and take the following steps:

- (1) Unscrew the screws located at the top and bottom of the conditioner panel.
- (2) Slowly pull toward the conditioner card.
- (3) Slowly push in the new replacement card along the guide rail in the casing, and then tighten the screws at the top and bottom of the conditioner.
- (4) After replacing the conditioner card, turn ON the EDX-100A and set measuring conditions. If the CH LED corresponding to the slot for which the conditioner card was replaced lights up, it means that it is properly replaced.

If the EDX-100A is not operating properly, the CH LED remains OFF even if the measuring conditions are set. At this time, extract the conditioner card and re-insert once again.



NOTE

- When the power is turned ON after the conditioner card is replaced with a new one or after a conditioner card is first inserted, the CH LED for that conditioner card remains OFF and the BUSY LED lights up red indicating that the EDX-100A is not ready for measurement. At this time, set measuring conditions.

7-3 INITIALIZING EDX-100A

You can initialize the EDX-100A to factory default by conducting the following procedures.

- (1) Turn OFF the EDX-100A.
- (2) Set the ID switch "F".
- (3) With the BAL. switch and READ switch pressed, turn ON the EDX-100A.
- (4) If you hear the buzzer issuing a "bip, bip, bip, bip" sound, stop pressing the 2 switches.
- (5) The REMOTE LED and SYNC LED start flashing green at the same time.
The EDX-100A starts initializing.
- (6) Wait a few moments. If you hear the buzzer issuing a "bip, bip, bip" sound, the REMOTE LED and SYNC LED light up in green at the same time.
- (7) Turn OFF the power, wait for about 5 seconds, then turn ON the power once again to initialize the EDX-100A to factory default.

MEMO

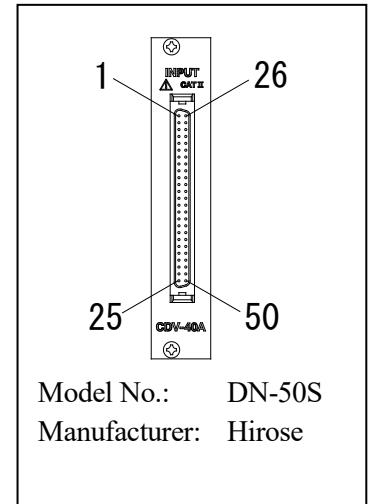
[Factory Default of LAN Settings of the EDX-100A]

IP address	192.168.100.100
Subnet mask	255.255.255.0
Default gateway	0.0.0.0

8. CONNECTOR PIN ASSIGNMENT

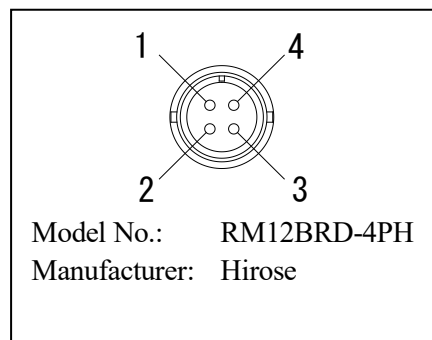
8-1 CDV-40B/A (-F) CENTRALIZED CONNECTOR

Pin No.	CH	Name	Pin No.	CH	Name
1	1	+BV	26	1	-IN
2		-BV	27		+IN
3		COM	28		ID
4	2	+BV	29	2	-IN
5		-BV	30		+IN
6		COM	31		ID
7	3	+BV	32	3	-IN
8		-BV	33		+IN
9		COM	34		ID
10	4	+BV	35	4	-IN
11		-BV	36		+IN
12		COM	37		ID
13	5	+BV	38	5	-IN
14		-BV	39		+IN
15		COM	40		ID
16	6	+BV	41	6	-IN
17		-BV	42		+IN
18		COM	43		ID
19	7	+BV	44	7	-IN
20		-BV	45		+IN
21		COM	46		ID
22	8	+BV	47	8	-IN
23		-BV	48		+IN
24		COM	49		ID
25	-	Shielded	50	-	Shielded



8-2 POWER SUPPLY CONNECTOR

Pin No	Name
1	Positive side
2	Positive side
3	Negative side
4	Negative side



9. HARDWARE SPECIFICATIONS

9-1 OVERALL SPECIFICATIONS

(1) Model name

Model Name	Maximum Analog Inputs (Channels)	Number of Slots	Remarks
EDX-100A-1	8	1	-
EDX-100A-2	16	2	
EDX-100A-4	32	4	
EDX-100A-1H	8	1	With handle
EDX-100A-2H	16	2	
EDX-100A-4H	32	4	

[Note] Number of slots: Number of slots for conditioner cards

(2) Number of input channels Maximum 32 channels for EDX-100A-4 (when four 8-channel cards are installed)

(3) Analog input

Strain/Voltage/Acceleration Measurement Card:	CVM-40A, CVM-41A
Strain/Voltage Measurement Card:	CDV-40B/A and CDV-40B/A-F
Dynamic Strain Amplifier Card:	DPM-42B/A and DPM-42B/A-F DPM-42B-I, DPM-42B-I-F
Thermocouple Card:	CTA-40A
F/V Converter Card:	CFV-40A
Charge Amplifier Card:	CCA-40A and CCA-40A-F
Strain/Voltage Measurement insulation Card:	CDV-44AS
Direct Rated Current Expansion Card (120 ohm):	CDA-44AS
Direct Rated Current Expansion Card (350 ohm):	CDA-44AS
A/D Converter Card	AD-40AS, AD-40AS-F

[Note] When CVM-41A using, number of channels that can be set to bridge excitation BV10 V or sensor power supply 10 VDC (± 5 V) mode, will be installed number of card $\times$ 3 channels or less.

(4) CAN data input

CAN card (1 port, maximum 128 channels):	CAN-40A
CAN card (2 ports, maximum 256 channels):	CAN-41A

[NOTE] Can install one CAN-40A or CAN-41A in the final slot.

(5) Voice memo input 1 channel

Voice memo entered prior to and while recording data can be recorded with measured data, using the dedicated RCU-41A (Optional).

(6) Sampling frequency

Sampling method Simultaneously all channels

Sampling frequency types

1/2/5 system: 1 Hz to 100 kHz, 2ⁿ system: 2 Hz to 65.536 kHz

Sampling frequency range

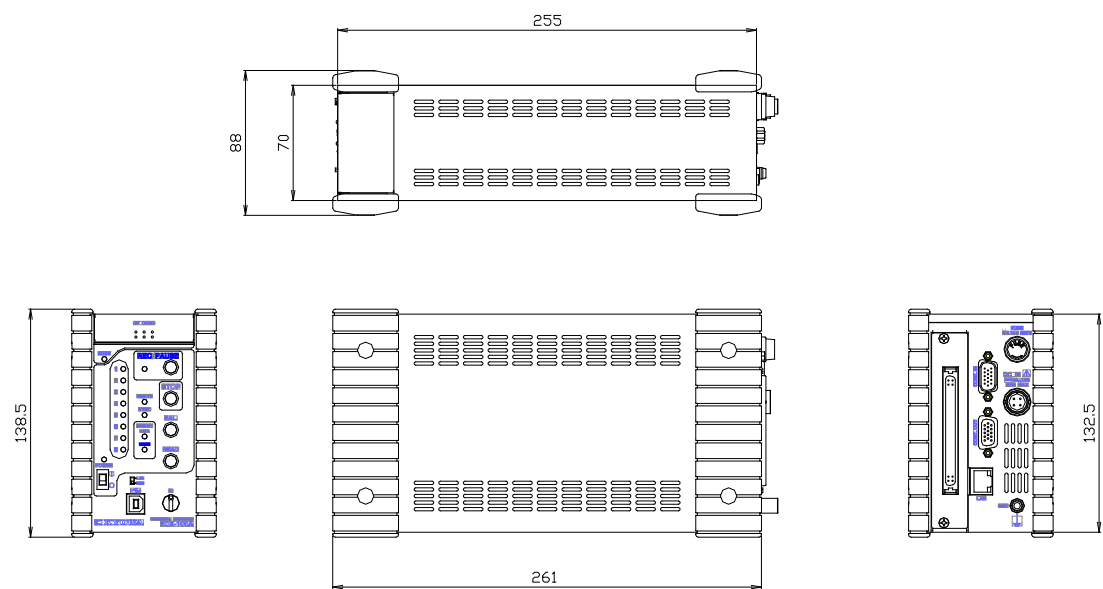
- *) 1 Hz to 100 kHz: When recording data of 1 channel
- *) 1 Hz to 10 kHz: When recording data of up to 16 channels
- *) 1 Hz to 5 kHz: When recording data of up to 32 channels
- *) 1 Hz to 1 kHz: When recording CAN data

- (7) Data recording unit CF card
 Capacity: 128 MB to 16 GB (our recommended only)
 Maximum data file size (available data file size to be recorded)
 2 GB/data file (1GB = 1,000,000,000 bytes)
- (8) How to set conditions ○ Online setting: Set measuring conditions on the PC via the LAN or USB interface.
 ○ Offline setting: Set measuring conditions by allowing the EDX-100A to read measuring conditions in the CF card.
 (Use DCS-100A to set measuring conditions.)
- (9) Saving conditions Store the amplifier setting conditions and measuring conditions in nonvolatile memory in the EDX-100A.
 When turning ON the EDX-100A, the user can immediately start data recording with previously set conditions.
- (10) Measuring mode Manual measurement
 The user starts and stops data recording, or data recording is stopped according to the previously set parameters.
 Voice memo can be recorded simultaneously when measuring in this mode.
 Trigger measurement
 Data is automatically recorded with preset trigger conditions.
 Trigger source is analog and external trigger signals.
 [Note] Trigger measurement is not available by CAN data.
 Interval measurement
 Data is automatically recorded with preset interval conditions.
- (11) Starting and stopping data recording
 Data recording starts/stops by using the PC, panel switches or the dedicated RCU-41A (Optional).
- (12) Balancing operation (balance adjustment operation)
 Balance (adjust the balance of) the strain input channel using the PC, panel switches or a dedicated RCU-41A (Optional).
- (13) Format of recorded data KYOWA's standard KS2 format
 Data in this format can be analyzed using the optional DAS-200A Data Analysis Software or DIAdem.
- (14) Data collection Online data collection using the PC or offline data collection by allowing the PC to directly read the CF card
- (15) TEDS function TEDS function is available only when online control from the PC.
 TEDS compatible conditioner cards: CDV-40B/A(-F),
 DPM-42B/A(-F),
 DPM-42B-I(-F), CCA-40A(-F),
 CDV-44AS, CDA-44AS,
 CDA-45AS, CVM-40A,
 CVM-41A, AD-40AS (-F)
- (16) Sync operation function Maximum 8 EDX-100A units can be cascade connected for synchronous operation.
 The recorded data is separately recorded in each of the EDX-100A installed CF cards.
 After collecting the respective recorded EDX data through online or offline into the PC, they are combined into 1 file.
- (17) Analog output The voltage can be monitored with the analog output connector of each conditioner card (± 5 VFS, except, CDV-40B/A (-F), AD-40AS (-F), CAN-40A, CAN-41A)
- (18) CF card interface One slot (for data recording and setting conditions)

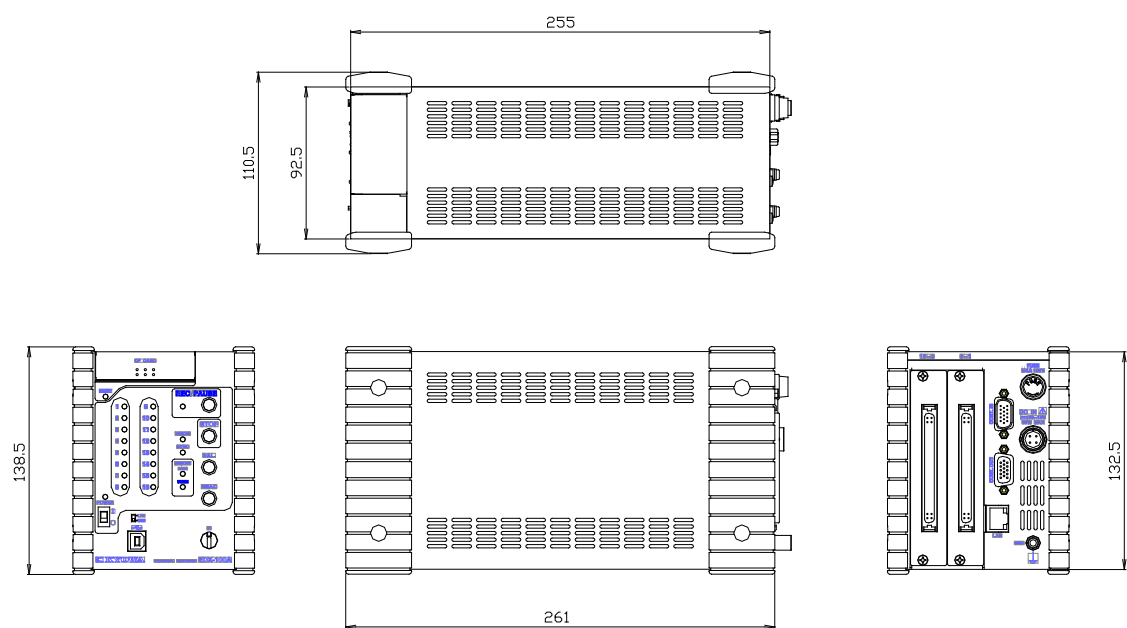
- (19) Communication interfaces..... LAN and USB (for control and data transfer)
 LAN interface 10BASE-T/100BASE-TX; RJ45 modular jack connector
 USB interface..... Conforming to USB 2.0 (high speed); series B receptacle connector
- (20) Control switches REC/PAUSE: Starts and pauses data recording
 STOP: Stops data recording
 BAL.: Performs balancing (balance adjustment)
 READ: Reads and sets conditions
 ID: Sets the EDX identification No.
 LAN/USB: Selects a communication interface (LAN/USB)
- (21) Indicator..... Number of EDX-100A status LEDs: 7
 Number of channel status LEDs: Number of channel(s)
- (22) External control connector CONT IN and CONT OUT (for remote control and synchronous operation)
- (23) Operating temperature range 0 to 50°C
- (24) Operating humidity range 20 to 90% (non-condensing)
- (25) Storage temperature range -20 to 60°C
- (26) Vibration resistance $\pm 29.42 \text{ m/s}^2$ (3G), 5 to 55 Hz (when in operation)
 $\pm 49.03 \text{ m/s}^2$ (5G), 5 to 55 Hz (when not in operation)
- (27) Impact resistance 196.1 m/s^2 (20G)/11 msec
- (28) Power supply 10 to 18 VDC
 RM12BRD-4PH connector (HIROSE)
 Use a DC power supply or a dedicated AC adapter (Optional)
 AC adapter input range: 100 to 240 VAC (50/60 Hz)
 (Because there is no backup function to safeguard against momentary power loss, external protection is required.)
- (29) Current consumption EDX-100A – 1(H): Approx. 0.9 A (12 VDC with one CDV-40B card installed under full load condition)
 EDX-100A – 2(H): Approx. 1.4 A (12 VDC with two CDV-40B cards installed under full load condition)
 EDX-100A – 4(H): Approx. 2.2 A (12 VDC with four CDV-40B cards installed under full load condition)
- (30) Outside dimensions EDX-100A - 1(H): 70 (W) × 132.5 (H) × 255 (D) mm
 EDX-100A - 2(H): 92.5 (W) × 132.5 (H) × 255 (D) mm
 EDX-100A - 4(H): 137.5 (W) × 132.5 (H) × 255 (D) mm
 [Note] Excluding protrusions
- (31) Weight..... EDX-100A - 1(H): Main unit: Approx. 1.6 kg
 (Approx. 1.7 kg with one CDV-40B card installed)
 EDX-100A - 2(H): Main unit: Approx. 1.8 kg
 (Approx. 2.0 kg with two CDV-40B cards installed)
 EDX-100A - 4(H): Main unit: Approx. 2.0 kg
 (Approx. 2.6 kg with four CDV-40B cards installed)
- (32) EMC Standard Applicable standard: EN61326-1, Class A equipment

10. EXTERNAL VIEW

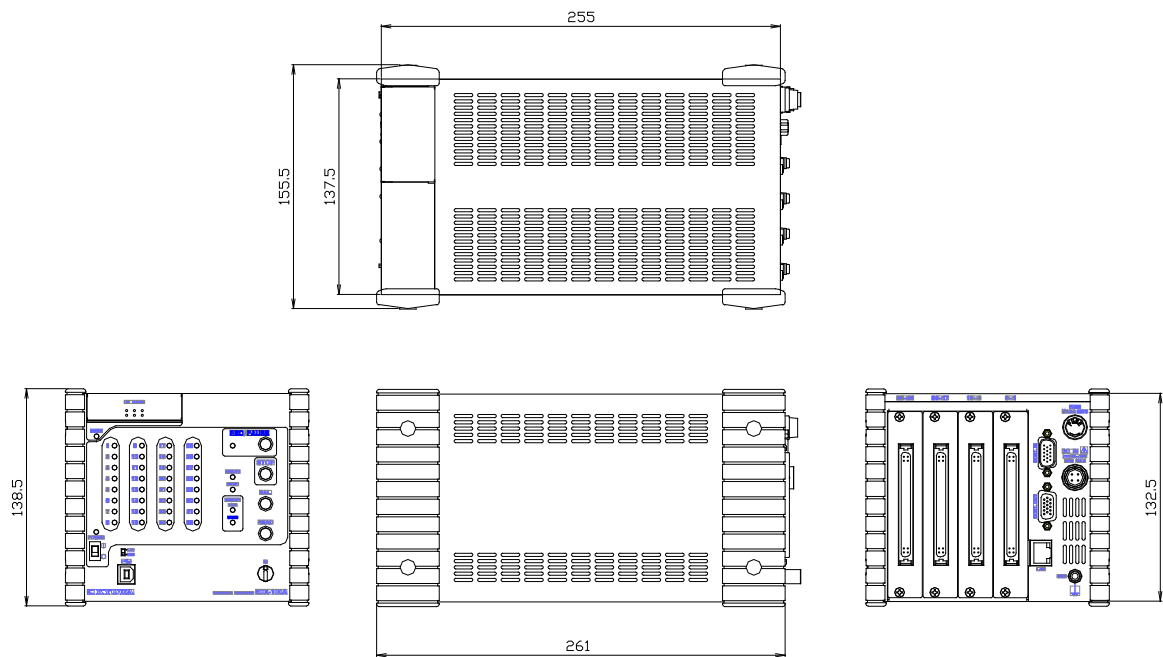
10-1 EDX-100A-1 UNIVERSAL RECORDER



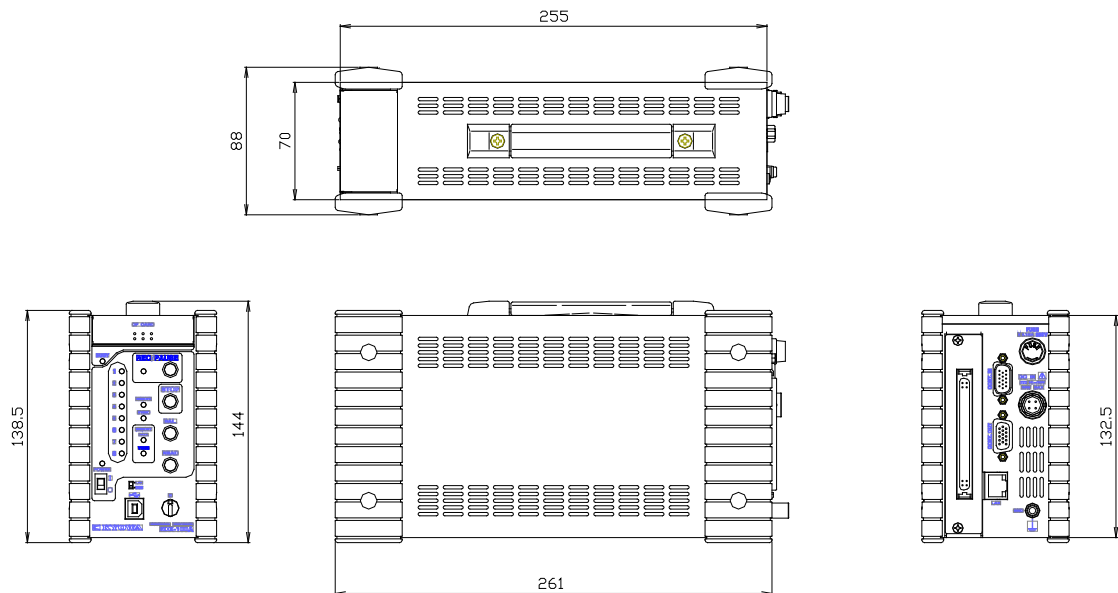
10-2 EDX-100A-2 UNIVERSAL RECORDER



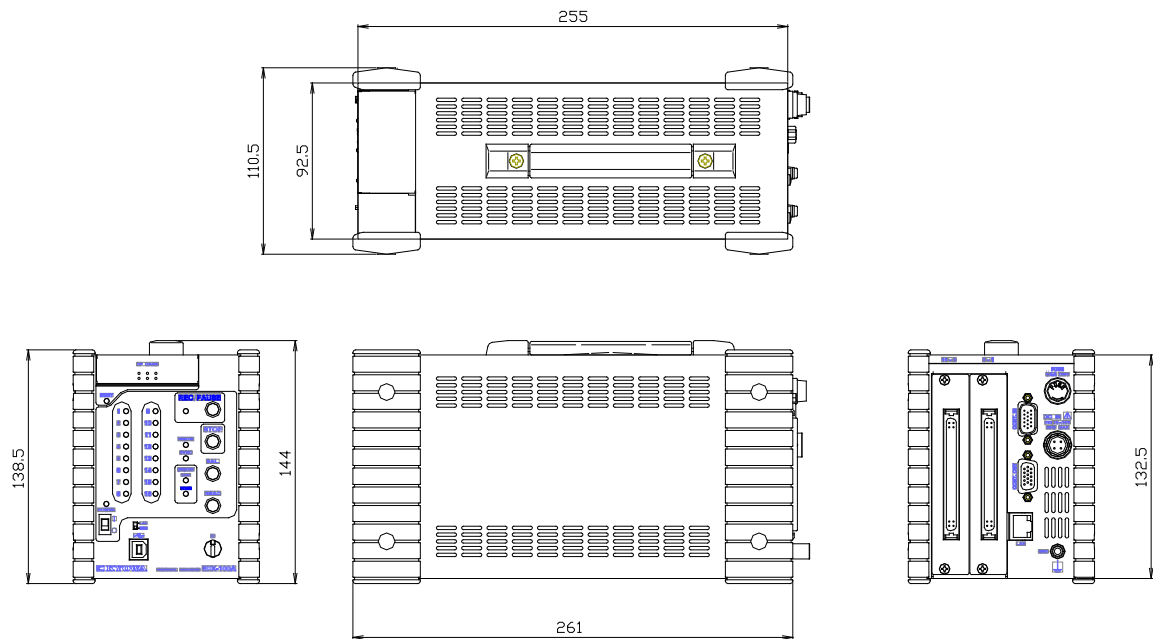
10-3 EDX-100A-4 UNIVERSAL RECORDER



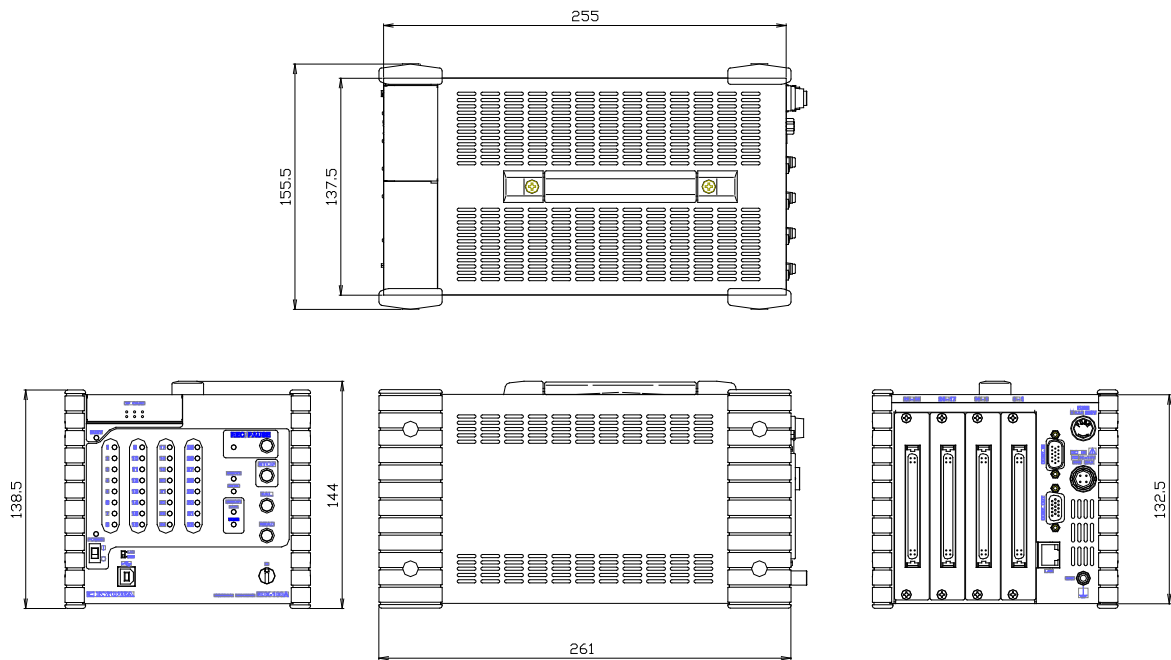
10-4 EDX-100A-1H UNIVERSAL RECORDER (with handle)



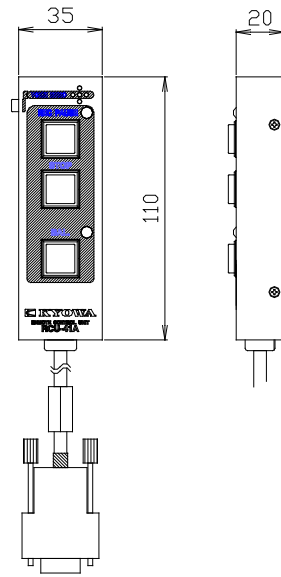
10-5 EDX-100A-2H UNIVERSAL RECORDER (with handle)



10-6 EDX-100A-4H UNIVERSAL RECORDER (with handle)



10-7 RCU-41A REMOTE CONTROL UNIT



11. APPENDIX

11-1 NAME OF RECORDED DATA FILE

The name of a recorded data file can be set using the DCS-100A. The name of the recorded data file consists of a file name and a file No., and is expressed in the following format.

NAME OF RECORDED DATA FILE = ○ ● ● ○ **** _ △ □ □ □ □ ■ .KS2

- | | | | |
|-----------|---|---|-----|
| ○ ● ● ○ | → | File name: Within 20 characters | (1) |
| **** | → | File No.: 0000 to 9999
Automatically incremented when data recording is completed. | (2) |
| △ | → | Measuring mode for interval and trigger measurements | (3) |
| | | I: Interval measurement | |
| | | A: Analog trigger measurement | |
| | | E: External trigger measurement | |
| | | C: Complex trigger measurement | |
| □ □ □ □ | → | Number of repeat times of interval and trigger measurement: 0000 to 9999 | (4) |
| ■ | → | ID switch Nos. (0 to 7) of the EDX-100A for synchronous operation | (5) |
| Extension | → | KS2 fixed. | |

The EDX-100A saves the recorded data file in the [EDX100A] folder in the CF card.

For the description on the recorded data file name, see the above items 1) to 5).

Item 1) [File name] and item 2) [File No.] of the recorded data file name are set using the DCS-100A. The EDX-100A checks the [Name of recorded data file in the CF card] and [Name of recorded data file from the DCS-100A].

In addition, for interval measurement and trigger measurement, items 3) and 4), and for synchronous operation, item 5) are added.

Basic method for checking the name of the recorded data file and the name of the recorded data file obtained from the check are described in the following.

- (1) If there is no same [File name] 1) in the CF card, write the recorded data file with the preset name into the CF card.

(Example)	Preset file name:	TEST0000.KS2
	Name of the recorded data file:	TEST0000.KS2

- (2) After data recording is complete, If START (start data recording) and STOP (stop data recording) are performed, the [File No.] 2) is automatically incremented and written to the CF card.

(Example)	Name of the recorded data file of the 1st data recording:	TEST0100.KS2
	Name of the recorded data file of the 2nd data recording:	TEST0101.KS2
	Name of the recorded data file of the 3rd data recording:	TEST0102.KS2

- (3) If there is a file with the same [File name] 1) in the CF card, and if the relevant recorded data in the CF card has a [File No.] 2) larger than the preset [File No.] 2), the name of the recorded data file shall be [File No.] 2) with [larger File No. +1].

(Example)	Preset file name:	TST0000.KS2
	File name that already exists in the CF card:	TST0100.KS2
	Name of the recorded data file:	TST0101.KS2

- (4) If the CF card contains the name of the recorded data file with the same [File name] 1) + [File No.] 2) = 9999, an error occurs (the BUSY LED lights up red) under the following conditions, thus disabling the data recording.
- When the EDX-100A is turned ON with the CF card inserted
 - When the CF card is inserted
 - When the new data recording starts
- At this time, change the [File name] 1) using the DCS-100A or replace the CF card with the one containing no recorded data.
- If data is recorded with the CF card with no recorded data, the [File No.] 2) in the name of the recorded data file shall be "0000."
- (5) Synchronous operation: For manual measurement with synchronous master (ID=0), the name of the recorded data file shall be as follows.
- TEST0000_0.KS2
- (6) Stand-alone measurement: For interval measurement, the name of the recorded data file shall be as follows.
- TEST0000_I0000.KS2
- (7) Synchronous operation: For interval measurement with synchronous slave (ID=1), the name of the recorded data file shall be as follows.
- TEST0000_I0000_1.KS2
- (8) For synchronous operation, processing of the above items (3) and (4) are not conducted and the name of the recorded data file name shall be the file name of the preset file No. Therefore, if the same file name exists, the file name is overwritten and updated. Before start recording data with synchronous operation, do not forget to set the files in the CF card in proper order.

11-2 RELATIONS BETWEEN MAXIMUM SAMPLING FREQUENCY AND RECORDABLE TIME AND THE NUMBER OF CHANNELS

(1) CF Card with capacity 2 GB or more (Reference)

Sampling Frequency	Number of Measuring Channels				
	1	3	8	16	32
100 kHz	125 Minutes				
50 kHz	250 Minutes	83 Minutes			
20 kHz	10 Hours	208 Minutes	78 Minutes		
10 kHz	20 Hours	6 Hours	156 Minutes	78 Minutes	
5 kHz	41 Hours	13 Hours	5 Hours	156 Minutes	78 Minutes
2 kHz	4.3 Days	34 Hours	13 Hours	6 Hours	195 Minutes
1 kHz	8 Days	2.8 Days	26 Hours	13 Hours	6 Hours
500 Hz	17 Days	5.7 Days	2 Days	26 Hours	13 Hours
200 Hz	43.4 Days	14 Days	5.4 Days	2.7 Days	32 Hours
100 Hz	86.8 Days	28 Days	10 Days	5.4 Days	2.7 Days
50 Hz	173 Days	57.8 Days	21 Days	10 Days	5.4 Days
20 Hz	434 Days	144.6 Days	54.2 Days	27 Days	13 Days
10 Hz	868 Days	289 Days	108.5 Days	54.2 Days	27 Days
5 Hz	1736 Days	578 Days	217 Days	108.5 Days	54.2 Days
2 Hz	4340 Days	1446 Days	542 Days	271 Days	135.6 Days
1Hz	8680 Days	2893 Days	1085 Days	542 Days	271 Days

(Note) Maximum sampling frequency for CAN card measurement is 1 kHz.

Recording available time may slightly vary depending on the media uses.

Data size recordable at one time is limited to 2,000,000,000 [bytes].

(2) CF card with capacity 128 MB (Reference)

Sampling Frequency	Number of Measuring Channels				
	1	3	8	16	32
100 kHz	8 Minutes				
50 kHz	16 Minutes	5 Minutes			
20 kHz	40 Minutes	13 Minutes	5 Minutes		
10 kHz	80 Minutes	26Minutes	10 Minutes	5 Minutes	
5 kHz	160 Minutes	53 Minutes	20 Minutes	10 Minutes	5 Minutes
2 kHz	6.6 Hours	133 Minutes	50 Minutes	25 Minutes	12 Minutes
1 kHz	13 Hours	4.4 Hours	100 Minutes	50 Minutes	25 Minutes
500 Hz	26 Hours	8.8 Hours	200 Minutes	100 Minutes	50 Minutes
200 Hz	2.7 Days	22 Hours	8.3 Hours	4.1 Hours	125 Minutes
100 Hz	5.5Days	44 Hours	16 Hours	8.3 Hours	4.1 Hour
50 Hz	11 Days	3.7 Days	33 Hours	16 Hours	8.3 Hours
20 Hz	27 Days	9.2 Days	3.4Days	41 Hours	20 Hours
10 Hz	55 Days	18 Days	6.9 Days	3.4Days	41 Hours
5 Hz	111 Days	37 Days	13 Days	6.9 Days	3.4 Days
2 Hz	277 Days	92 Days	34Days	17 Days	8.6 Days
1Hz	555 Days	185 Days	69 Days	34 Days	17 Days

(Note) Maximum sampling frequency for CAN card measurement is 1 kHz.

Recording available time may slightly vary depending on the media uses.

11-3 EXTERNAL TRIGGER FUNCTION

By entering the external trigger signal to the EDX-100A, the data recording starts.

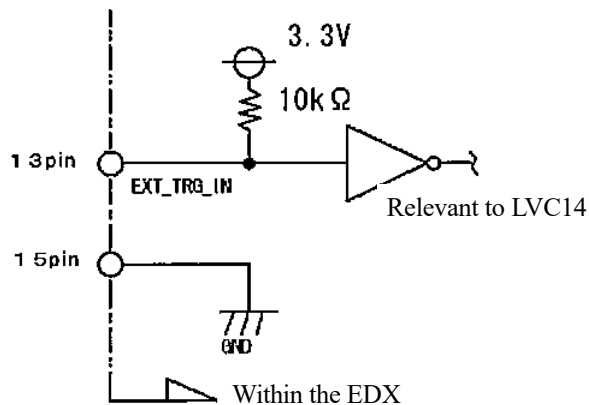
(However, the above is available when it is set to save the recorded data only in the CF card inserted in the EDX-100A.)

(1) External trigger signal pins assignment and connector

External trigger pins are assigned on the connector (CONT IN) of the EDX-100A rear face.

Do not use pins other than 13 and 15 pins.

[CONT IN] D-sub high-density 15 male pins (EDX-100A side)



Applicable connector (Cable side)

Connector: DHW20-151F200

(TECHNICAL CORP.)

Hood: 17JE-09H2-1C4)

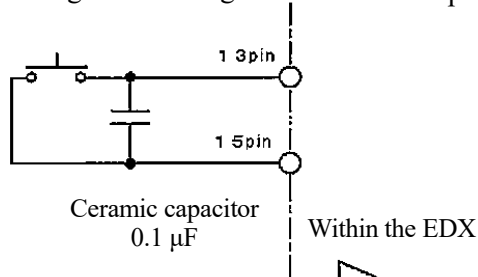
(DDK: Inch screw thread)

(2) Input signal

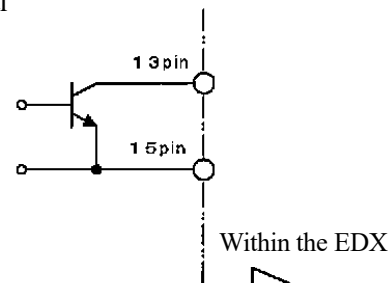
Input non-voltage contact signal or open-collector signal.

Rise and fall of the signal depends on the setting on the DCS-100A side.

Non-Voltage Contact Signal



Open-Collector Signal



NOTE

- Take care to prevent chattering noise from entering into the trigger input signal.
- Accept trigger signal from open-collector signal to prevent disturbance of external devices from entering into the EDX-100A. It is recommended to use insulation elements such as photocoupler, etc.
- The trigger signal is operated with time width more than 1 time width of the preset sampling frequency.
- Input threshold value with open detection level: 2.4 V or more and short detection level: 0.4V or less
- Maximum input voltage range is 0 to +5 V. If it exceeds this voltage range, input circuit may become faulty.
- Do not use other than 13 and 15 pins of [CONT IN] high-density D-sub connector. Or, malfunction or damage in the EDX-100A may result.
- Do not use the RCU-41 A together with the EDX-100A.
- Before conducting the main test, do not forget to conduct pre-test and check whether external trigger function properly operates.

11-4 EXTERNAL CLOCK SIGNAL AND EDX-100A MEASUREMENT PROCEDURE

11-4-1 Outline

This section describes how to use the pulse signal, generated from an external device including oscillator, as the sampling clock of the EDX-100A. The external clock signal enables the synchronous data recordings between the EDX-100A and other data loggers.

The external clock signal can be used with the stand-alone unit, synchronous operation, on-line operation, and off-line operation.

11-4-2 About software version

Before using the external clock signal, make sure the EDX-100A firmware version and DCS-100A software version satisfy the following requirements. When the EDX-100A firmware version and DCS-100A software version do not satisfy the following requirements, be sure to update them.

EDX-100A firmware version:	01.06 or later
DCS-100A software version:	01.11 or later

11-4-3 Notes for External Clock Input

- (1) Input a steady external clock signal that will not vary with time.
- (2) While the EDX-100A is measuring data, an external clock signal should be sent to the EDX-100A. When the external clock signal is not sent to the EDX-100A, the EDX-100A cannot start measuring data. If the frequency of the external clock signal exceeds $\pm 5\%$ tolerance or if the external signal is stopped during the measurement, the EDX-100A detect the "External clock error" and stops the measurement.

NOTE

- The tolerance of the external clock signal is approximately within $\pm 5\%$ of the pre-set frequency. Within the above range, the EDX-100A considers that the steady frequency is input. When the reference frequency is 8,000 Hz, the external clock signal should be 7,600 to 8,400 Hz. However, to avoid inconvenience, we recommend you transmit the external clock signal having the same frequency as the pre-set reference frequency.
- When the external clock error occurred during measurements, the EDX-100A stops recording. Recorded data, REC/PAUSE information, and voice data from the recording start point to the recognizing error point are saved in the CF card (when you choose the location where recorded data files should be saved to the CF card).

- (3) You can set the frequency (range: 1 to 100,000 Hz) of the external clock signal in 1 Hz step.
Based on the number of measuring channels, whether CAN cards (CAN-40A/41A) are used or not, and whether the low pass filter of a conditioner card is set to AUTO or not, the available frequency of the external clock signal changes. The available frequency range is defined in the same manner as the internal clock.
- (4) When the measurement starts, the EDX-100A is checking the frequency of the transmitted external clock signal. It takes approximately 3 cycles of the pre-set clock period. Thus, the EDX-100A starts measurement (starts monitoring data) later than the internal clock signal. Pay attention - especially when transmitting the low external clock signal like 5 Hz or less.

11-4-4 Connection method

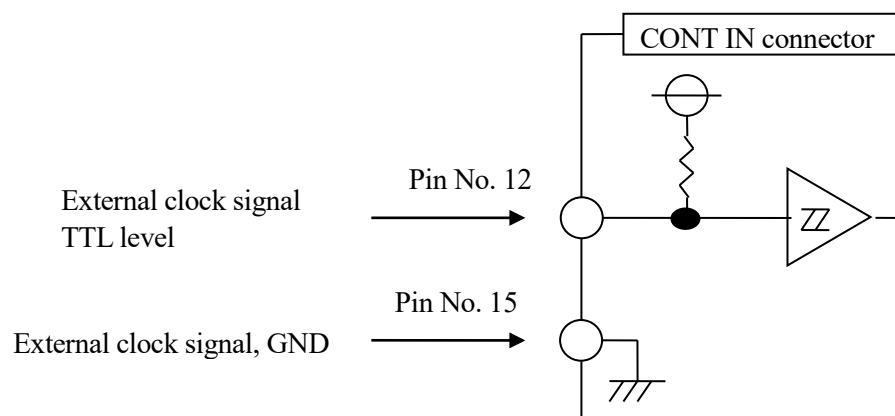
Input the external clock signal into the CONT IN connector, located on the back panel of the EDX-100A, by referring the following points.

(1) Connect the external clock signal into the CONT IN connector.

Connect the CONT IN connector as follows.

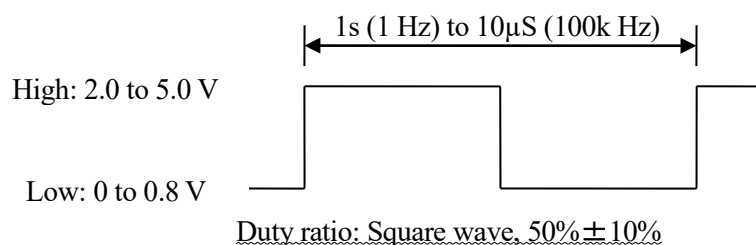
Pin No. 12: External clock signal

Pin No. 15: GND of the external clock signal



(2) External clock signal

Input the "TTL level" signal described in the following.



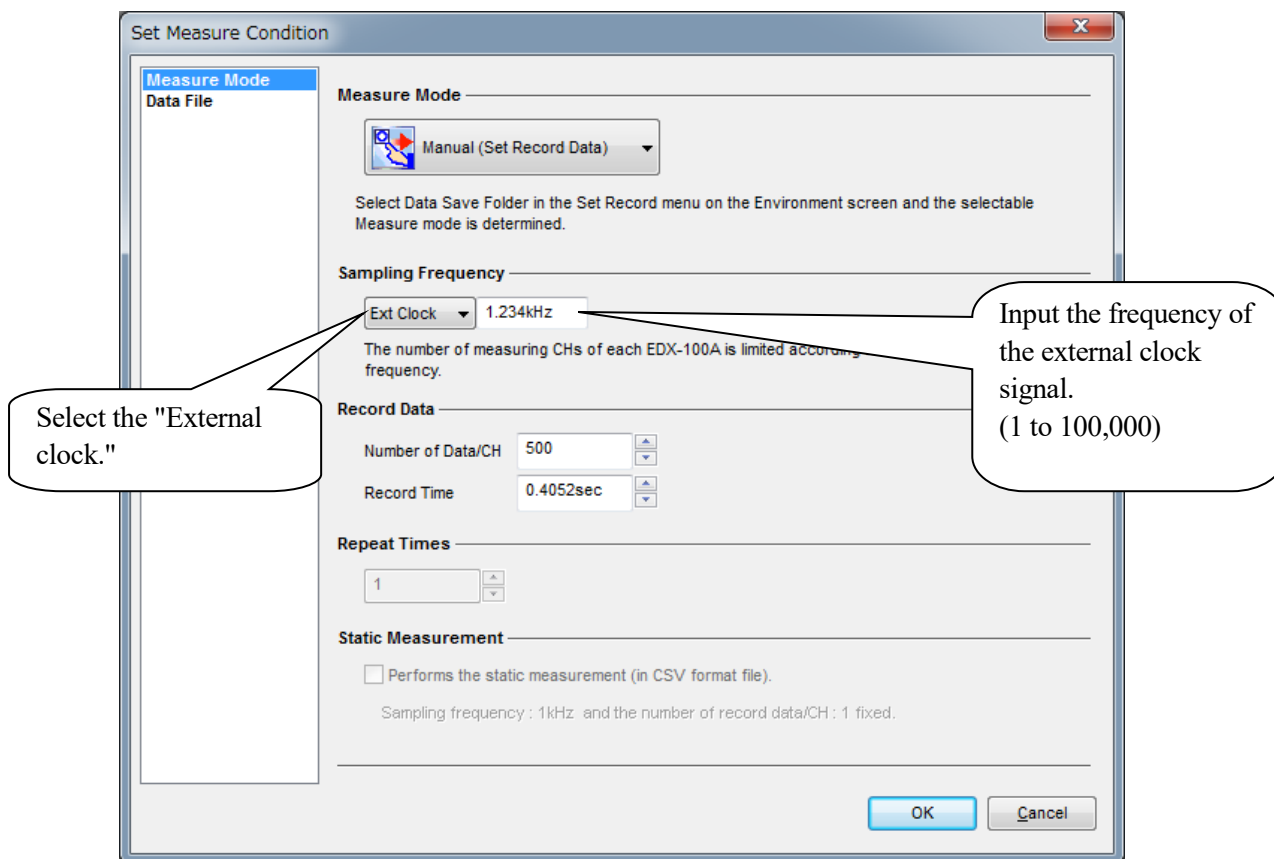
MEMO

For the pin assignment of the CONT IN connector and CONT OUT connector, see “**11-5 CONT IN CONNECTOR AND CONT OUT CONNECTOR.**”

11-4-5 How to Set Measuring Conditions

Set the measuring conditions of the EDX-100A by using the DCS-100A. Procedures are described as follows.

- (1) Point to Set and select Set Measure Condition menu to open the Set Measure Condition window.



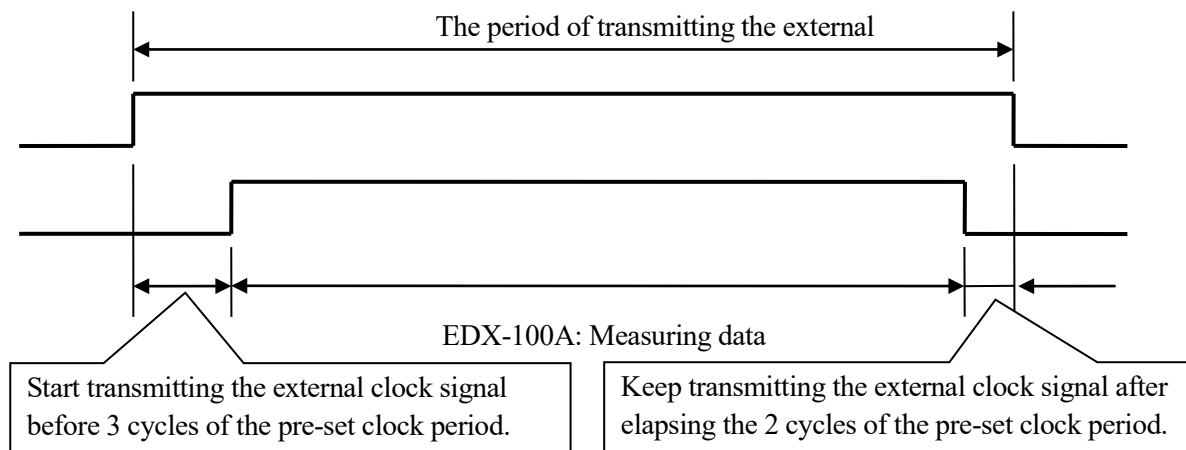
- (2) Select the "External clock" from the list box. Input the frequency in the text box next to the list box. You can set the frequency (range: 1 to 100,000 Hz) in 1 Hz step. The external clock of 1234 Hz is set in the above window.
- (3) Click the OK button to close the window.

NOTE

- Based on the number of measuring channels, whether CAN cards (CAN-40A/41A) are used or not, and whether the low pass filter of a conditioner card is set to AUTO or not, the available frequency of the external clock signal changes. The available frequency range is defined in the same manner as the internal clock.

11-4-6 Measurement Procedure with External Clock

While the EDX-100A is in the measuring status, the external clock signal should be transmitted.
Conduct measurements in the same manner as you use the internal clock.



Procedures are described as follows.

- (1) Send the external clock signal into the CONT. IN connector of the EDX-100A.

For details, see "11-4-5 How to Set Measuring Conditions".

- (2) Start the EDX-100A to measure data. Conduct the required measurement.
- (3) Stop the EDX-100A.
- (4) When stop transmitting the external clock signal, stop the EDX-100A first.

Wait while (2 cycles of the pre-set clock period) and stop transmitting the external signal.

MEMO

- For the synchronous operation, send the external signal into the CONT IN connector of the master EDX-100A, (The external clock signal is sent to the slave EDX-100A units through synchronous cables.)
- After the measurement is finished, you do not need to stop the external clock signal.
- We recommend you always transmit the external clock signal for measurements while the EDX-100A is ON.

NOTE

- When conducting the trigger measurement or interval measurement, you need to input the external clock signal until all the repetitive measurements are complete. When the external clock error occurred during measurements, the EDX-100A stops recording. Recorded data, REC/PAUSE information, and voice data from the recording start point to the recognizing error point are saved in the CF card (when you choose the location where recorded data files should be saved to the CF card.)

11-4-7 External clock error

If the external clock error occurred, the SYNC LED flashes red on the EDX-100A to indicate the error status. When conducting the online measurement by using the DCS-100A at that time, the error message appears on the window.

The LED state at the time of external clock operation

	External clock: Not error	External clock: Error
Stand-alone unit	OFF	Flashing red
Synchronous master unit	Lights up in green	Flashing red
Synchronous slave unit	Lights up in orange	Lights up in orange (conservativation)

When the SYNC LED flashes red, take any of the following action.

The external clock error will be cleared.

(However, the external clock error is not cleared when the same error will occur again by starting a measurement.)

- (1) When turning OFF and ON the EDX-100A.
- (2) When start recording data by using the REC/PAUSE switch on the EDX-100A.
- (3) When start monitoring data by using the STOP switch on the master EDX-100A in synchronous operation.
- (4) When loading the measuring conditions in the CF card by using the READ switch on the EDX-100A.
- (5) When saving the measuring conditions into the EDX-100A CF card by using the DCS-100A.
- (6) When conducting the internal sensitivity compensation or when conducting the initialization by using the DCS-100A.
- (7) When start monitoring data or when start recording data by using the DCS-100A.

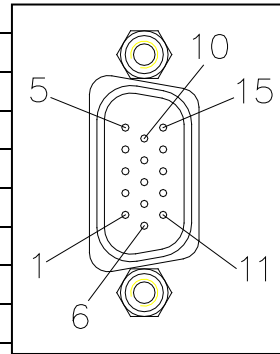
11-5 CONT IN CONNECTOR AND CONT OUT CONNECTOR

11-5-1 CONT IN connector

The pin assignment of the CONT.IN connector are as follows.

Connector: D-sub, high density, 15-pin, maleDRHX-E15P-NJ-CT (Chuo Musen Denki Corporation.)

Pin No.	Name	Description
1	Reserved	Connect nothing.
2	Reserved	Connect nothing.
3	Reserved	Connect nothing.
4	OSC+	Oscillator input/output for DPM
5	3.3V	Power supply for remote control unit (3.3 V, connect nothing.)
6	Reserved	Connect nothing.
7	Reserved	Connect nothing.
8	Reserved	Connect nothing.
9	Reserved	Connect nothing.
10	OSC-	Oscillator input/output for DPM
11	Reserved	Connect nothing.
12	EXT CLK IN	Clock input for synchronous operation
13	EXT TRG IN	External trigger input
14	Reserved	Connect nothing.
15	GND	GND (COM for external inputs)



Applicable connector (cable side): DHW20-151F200 (Technical electron co. Ltd.)

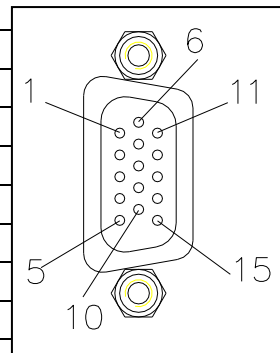
Hood: 17JE-09H2-1C4 ((DDK Ltd. unified screw thread)

11-5-2 CONT OUT connector

The pin assignment of the CONT.OUT connector are as follows.

Connector: D-sub, high density, 15-pin, femaleDHR20-151F204 (Chuo Musen Denki Corporation.)

Pin No.	Name	Description
1	Reserved	Connect nothing.
2	Reserved	Connect nothing.
3	Reserved	Connect nothing.
4	OSC+	Oscillator input/output for DPM
5	3.3V	Power supply (3.3 V, connect nothing.)
6	Reserved	Connect nothing.
7	Reserved	Connect nothing.
8	Reserved	Connect nothing.
9	Reserved	Connect nothing.
10	OSC-	Oscillator input/output for DPM
11	Reserved	Connect nothing.
12	EXT CLK OUT	Clock output for synchronous operation
13	EXT TRG OUT	External trigger output
14	Reserved	Connect nothing.
15	GND	GND (COM for external inputs)



Applicable connector (cable side): DHW10-151F200 (Technical electron co. Ltd.)

Hood: 17JE-09H2-1C4 ((DDK Ltd. unified screw thread)