

# **MEMORY RECORDER/ANALYZER**

## **EDX-2000A**

### **Simplified Instruction Manual**

For details, refer to the  
Instruction Manual in  
the attached CD-R.



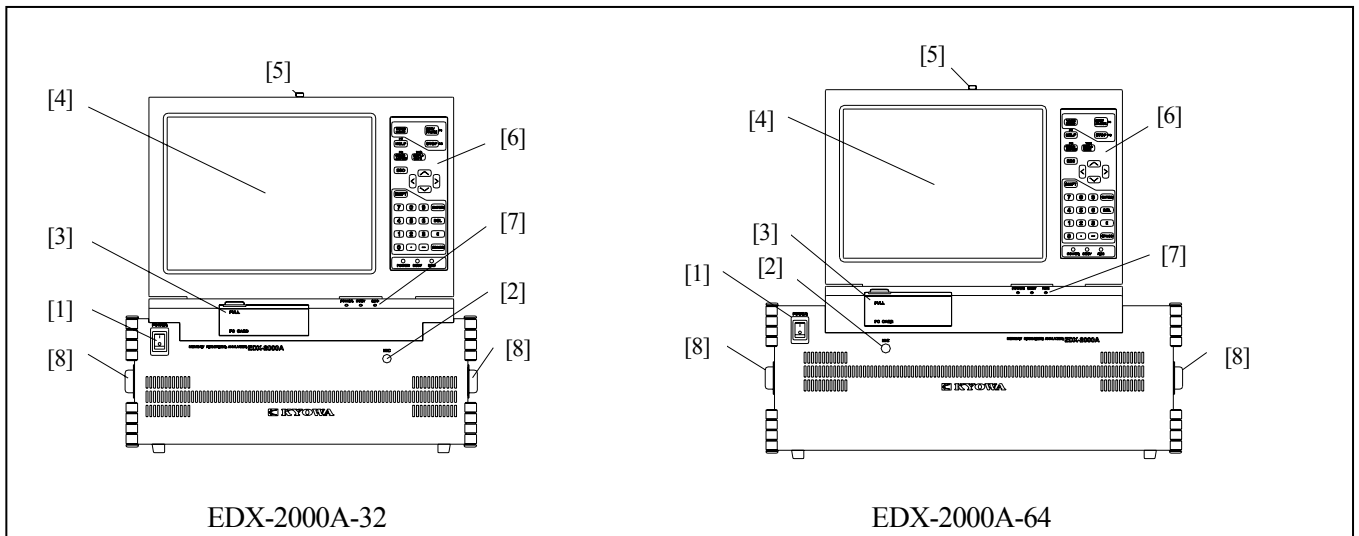
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# 1. CONTROLS AND INDICATORS

## 1-1 FRONT

The following figures are front views of upright display screens of EDX-2000A-32 and EDX-2000A-64.



- 1) “POWER” switch      Press “○” side of this “POWER” switch to turn ON and “|” side to turn OFF the power. When this switch is turned OFF, the internal data is saved and then, the power is automatically shut OFF.

### NOTE

Do not disconnect the power plug from the power outlet or DC power supply when the POWER switch is ON. When the POWER switch is turned OFF, wait until the power is shut OFF before disconnecting the power plug. Once you turn OFF the POWER switch, do not operate the POWER switch again until the power is shut OFF. Failure to observe these precautions may destroy the internal hard disk and cause the EDX-2000A not to start up once again.

- 2) “MIC” connector      The MIC connector is used to connect the external microphone. A commercially available microphone should be connected to this connector. It’s a stereo “mini jack” connector of 3.5 mm in diameter with which the condenser type microphone is used for recording voice memos.
- 3) “PC CARD”      By pulling open the “PULL” portion, you can see the PC card connector. The ATA card and hard disk type card can be used.
- 4) Display      A 10.4 inch TFT color LCD.
- 5) Display knob      By sliding the knob to the right, the display can be pulled open and into the upright position. The above figure is the front view of the EDX-2000A with the display set upright. Moving the display to the rear will lock the display in position.
- 6) Sheet key      Sheet keys are used for controlling the EDX-2000A. LEDs are provided at the bottom to indicate various statuses.
- 7) Status display LED      LEDs are provided to indicate the status of main unit. These LEDs are the same as those provided at the bottom of the sheet keys. Details of LED status are described in the table on the next page.

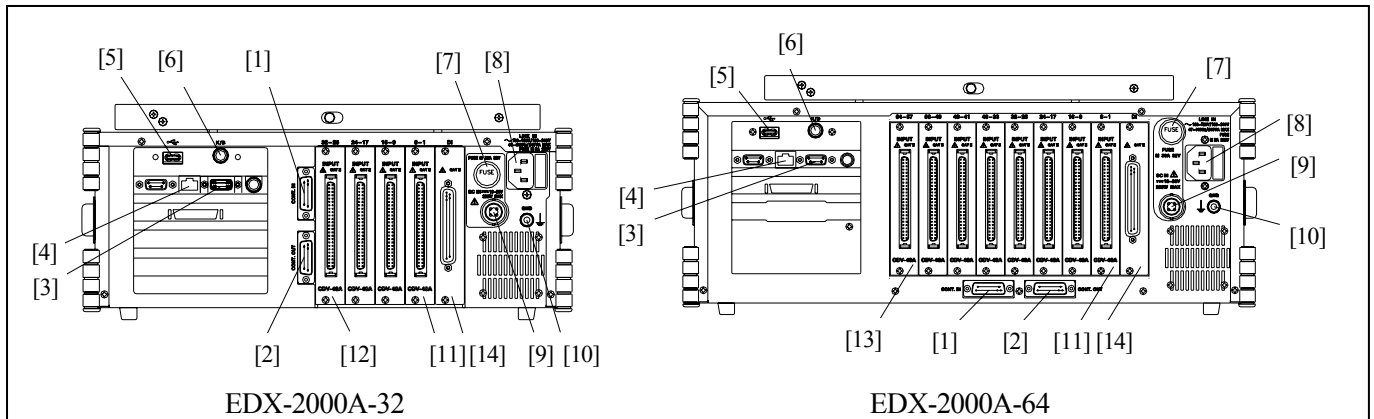
| Status \ LED                       | POWER                                                                                                       | BUSY                             | REC                  |
|------------------------------------|-------------------------------------------------------------------------------------------------------------|----------------------------------|----------------------|
| Green LED ON                       | Power ON state                                                                                              | Accessing the internal hard disk | Recording            |
| Green LED flickers                 | Getting ready to turn OFF the power<br>(After saving the internal data, the power automatically turns OFF.) |                                  | Pausing              |
| Orange LED ON                      | Charging the internal battery                                                                               |                                  |                      |
| Orange LED flickers                | Discharging the internal battery                                                                            |                                  |                      |
| Red LED ON                         | Internal battery faulty                                                                                     |                                  | Recording voice memo |
| Red LED flickers                   | DC power supply voltage dropping (The LED flickers when the voltage drops to less than approx. 11 V.)       |                                  |                      |
| Red and Orange LEDs alternately ON | Internal battery operating (AC or DC power supply is OFF)                                                   |                                  |                      |

- 8) Handles                      A pair of handles is provided for easy transportation of the EDX-2000A.

**NOTE**

- When mounting the EDX-2000A on the vehicle, always set it on the car seat and securely fix it a band and the like. Do not directly mount it on the vehicle chassis. Or unexpected vibration or impact may be applied to the EDX-2000A. At this time, set it on a vibration isolation table to reduce the applied vibration and impact.

## 1-2 REAR



- |                               |                                                                                                                                                                                   |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1) CONT IN connector          | The CONT IN connector is used for a dedicated remote control or to facilitate the synchronized operation of multiple systems.                                                     |
| 2) CONT OUT connector         | The CONT OUT connector is used to facilitate the synchronized operation of multiple systems.                                                                                      |
| 3) External monitor connector | This connector is used to connect an external monitor.                                                                                                                            |
| 4) LAN connector              | The LAN connector is used for data transmission.                                                                                                                                  |
| 5) USB connector              | USB connector.                                                                                                                                                                    |
| 6) Keyboard connector         | This connector is used to connect the external keyboard.                                                                                                                          |
| 7) DC power supply fuse       | This fuse (6.3 x 32 mm, 30 amp) is used for the DC power supply.                                                                                                                  |
| 8) AC inlet socket            | Connect this AC power supply connector to the AC power outlet using the attached AC power cable. The socket is provided with built-in fuse (5 x 20 mm in diameter, and 3.15 amp). |
| 9) DC power supply connector  | Voltage of this DC power supply connector ranges from 10 to 30 VDC.<br>For connector types and pin numbers, see 8, "CONNECTOR PIN ASSIGNMENT."                                    |

### NOTE

When the POWER switch is turned OFF, do not disconnect the power plug from the power outlet or DC power supply until the power is shut OFF. Once the POWER switch is turned OFF, do not operate the POWER switch again until the power is automatically shut OFF. Failure to observe these precautions may destroy the internal hard disk and cause the EDX-2000A not to start up once again.

- |                  |                                                  |
|------------------|--------------------------------------------------|
| 10) GND terminal | Always ground the GND terminal of the EDX-2000A. |
|------------------|--------------------------------------------------|

### MEMO

The "GND" terminal is connected to the casing, the common of the internal power supply and the negative side of the DC power supply input connector.

- |                                |                                   |
|--------------------------------|-----------------------------------|
| 11) 1-CH to 8-CH conditioner   | Conditioner of 1 to 8 channels.   |
| 12) 25-CH to 32-CH conditioner | Conditioner of 25 to 32 channels. |
| 13) 57-CH to 64-CH conditioner | Conditioner of 57 to 64 channels. |

### MEMO

Channel number is determined by the position where the conditioner is inserted. The channel numbers are assigned from right to left as seen from the rear.

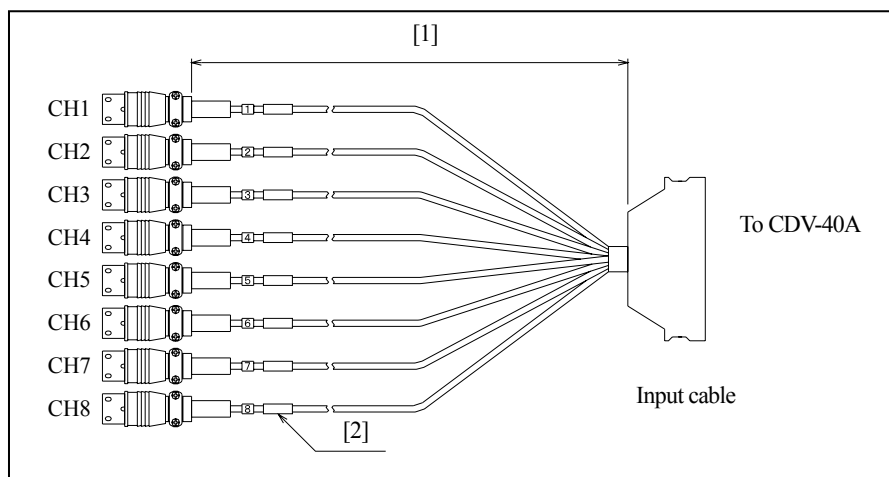
- |             |                                        |
|-------------|----------------------------------------|
| 14) DI card | The DI card is used for digital input. |
|-------------|----------------------------------------|

## 2. CONNECTING SENSORS

This section explains how to connect sensors to the CDV-40A strain/voltage measurement card (hereinafter referred to as the CDV-40A).

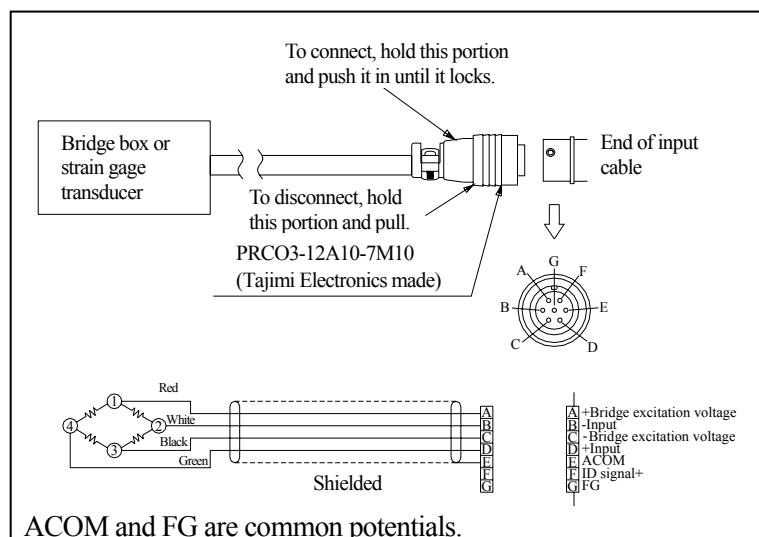
Use dedicated input cables (optional) for connecting sensors to the CDV-40A. The applicable input cables are shown in the following table.

| Item        | Model | Cable length<br>(Figure [1]) | Color of heat shrinkable<br>tube<br>(Figure [2]) | Item        | Model | Cable length<br>(Figure [1]) | Color of heat shrinkable<br>tube<br>(Figure [2]) |
|-------------|-------|------------------------------|--------------------------------------------------|-------------|-------|------------------------------|--------------------------------------------------|
| Input cable | U-40  | 50 cm                        | N/A                                              | Input cable | U-46  | 50 cm                        | Blue                                             |
|             | U-41  |                              | Brown                                            |             | U-47  |                              | Purple                                           |
|             | U-42  |                              | Red                                              |             | U-48  |                              | Gray                                             |
|             | U-43  |                              | Orange                                           |             |       |                              |                                                  |
|             | U-44  |                              | Yellow                                           |             | U-38  | 1.5 m                        | N/A                                              |
|             | U-45  |                              | Green                                            |             | U-39  | 1.0 m                        | N/A                                              |

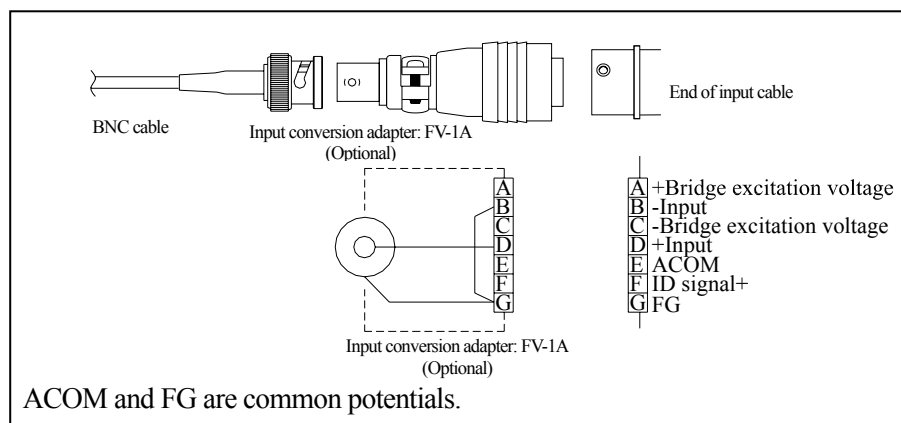


The CDV-40A is capable of performing strain measurement and voltage measurement. The input cable should be connected as described below:

[1] When using a strain gage or strain gage transducer

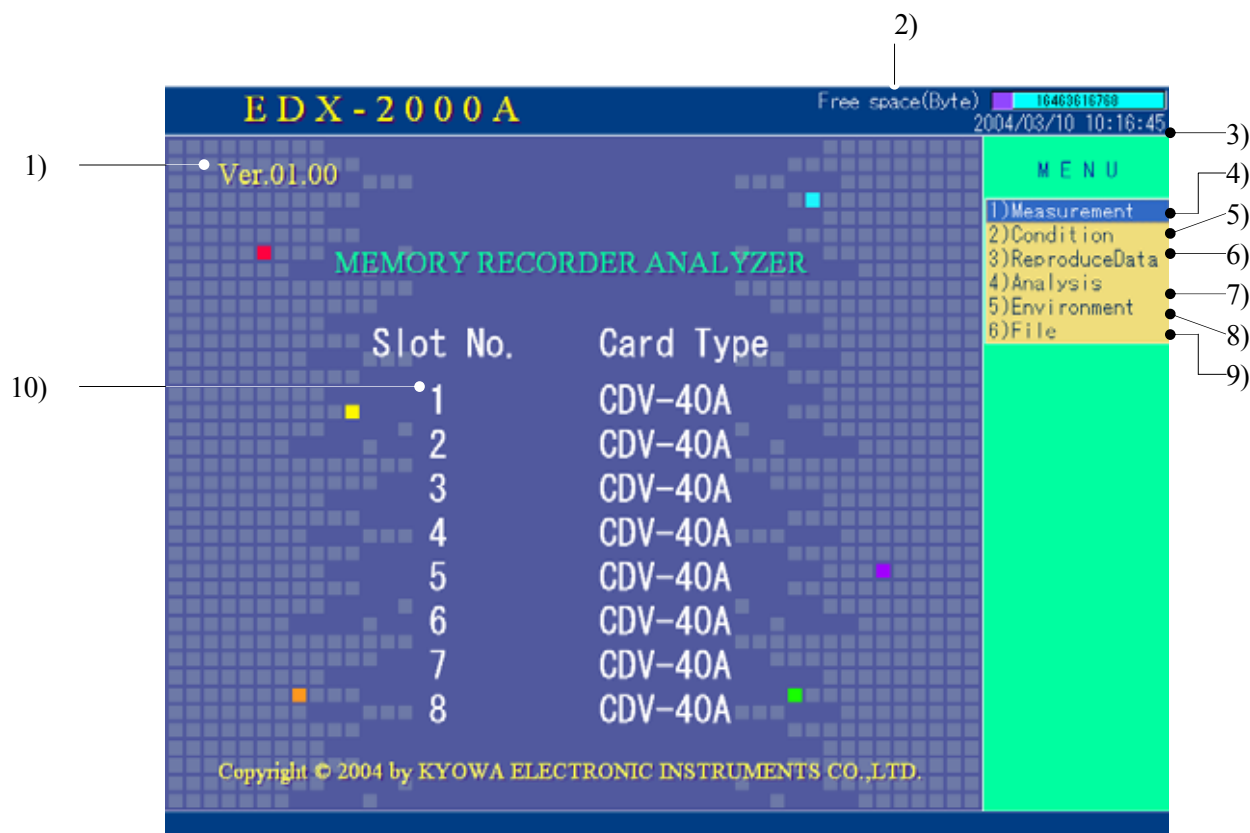


[2] When applying input voltage



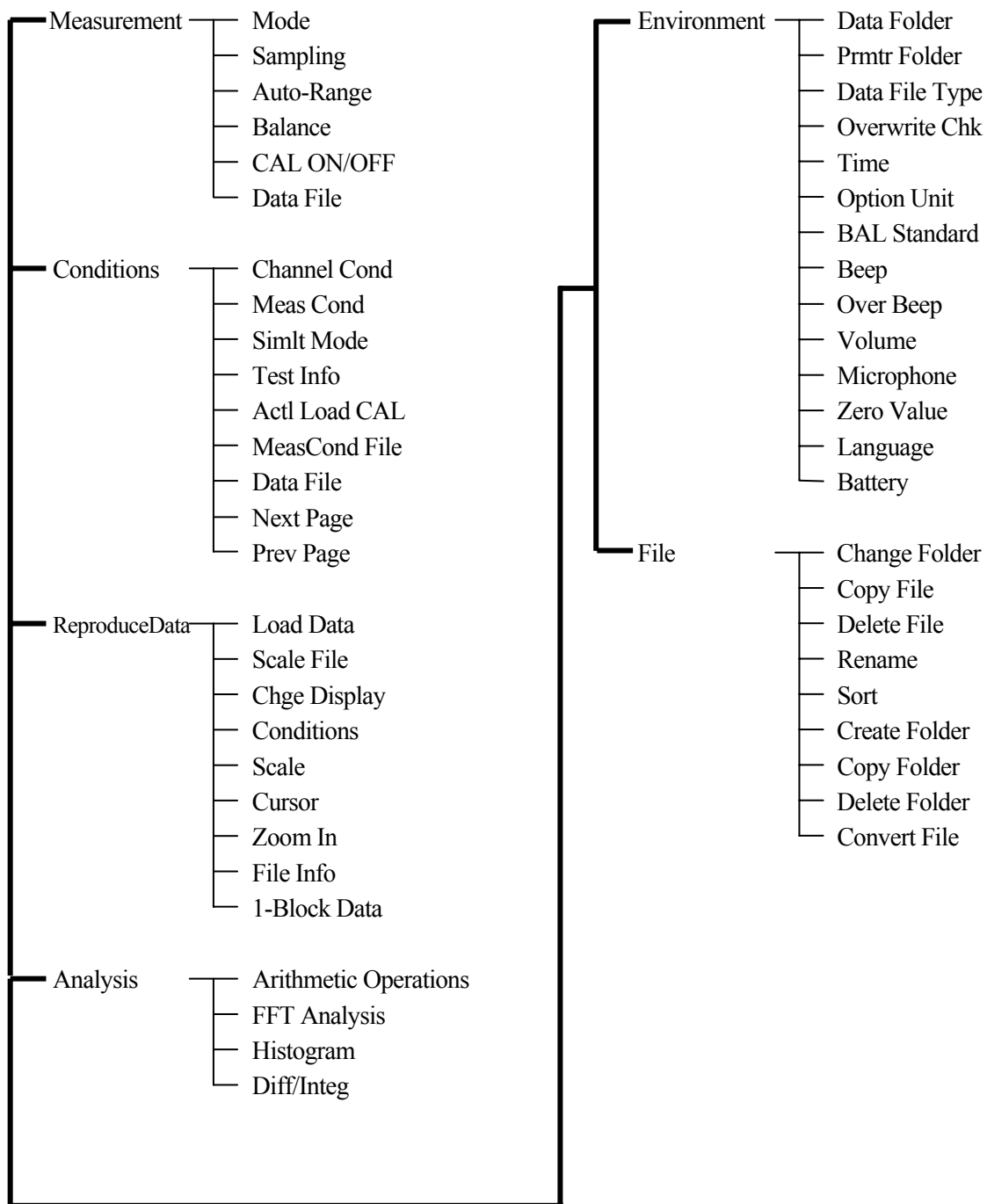
### 3. MAIN MENU

Power ON the EDX-2000A and the main menu appears. The main menu has 6 menu items, <Measurement>, <Conditions>, <ReproduceData>, <Analysis>, <Environment>, and <File Manage>. Select the required menu and move to the operating screen of the selected function. When the selected function is terminated, it returns to the main menu screen once again.



- 1) ..... Software version
- 2) Free Space ..... Indicate free space of the built-in hardware disk.
- 3) ..... Current date and time. Can be changed by selecting <Environment> main menu.
- 4) <Measurement> ..... Conduct measurement.
- 5) <Condition> ..... Set various conditions for measurement.
- 6) <ReproduceData> ..... Graphically displays or edits the recorded data.
- 7) <Analysis> ..... Conduct arithmetic operations, FFT analysis, histogram analysis, and differential/integral analysis to the recorded data
- 8) <Environment> ..... Set environment for operating the EDX-2000A.
- 9) <File> ..... Conduct recording data file operation.
- 10) ..... Conditioner card names that are inserted into each of the slots.  
The slot with “\*\*\*” displayed means that the conditioner is not installed.

## 4. MENU TREE OF EDX-2000A



## 5. SIMPLIFIED OPERATIONS FROM POWER ON TO MEASUREMENT

This Chapter describes simplified operations of the EDX-2000A. By connecting a strain gage or strain gage transducer, the EDX-2000A is designed to set various channel and measuring conditions, conduct measurement, and record the measured data.

|                                                                                                                                   |                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1. Connect sensors and turn ON the EDX-2000A power.<br/>* For details of connecting sensors, see “2-2 CONNECTING SENSORS.”</p> | <p>Turn ON the [POWER] switch on the front.</p>                                                              | <p>Example of main menu display</p> <div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: fit-content;"> <p style="text-align: center;">Menu</p> <ol style="list-style-type: none"> <li>1) Measurement</li> <li>2) Conditions</li> <li>3) ReproduceData</li> <li>4) Analysis</li> <li>5) Environment</li> <li>6) File</li> </ol> </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <p>2. Set measuring channel.</p>                                                                                                  | <p>Select menu items in due order.</p> <p>→ 2) Conditions</p> <p>→ 1) Channel Cond</p> <p>→ 1) Meas Cond</p> | <div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: fit-content;"> <p style="text-align: center;">Set measuring channel.</p> <div style="border: 1px solid black; padding: 5px; margin: 5px auto; width: fit-content;"> <ol style="list-style-type: none"> <li>0) Measure</li> <li>1) Not measure</li> </ol> </div> </div> <p>Press [0] or [1] key to set whether measurement is ON or OFF.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <p>3. Set measuring range.</p>                                                                                                    | <p>Select menu items in due order.</p> <p>→ 2) Conditions</p> <p>→ 1) Channel Cond</p> <p>→ 2) Mode</p>      | <div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: fit-content;"> <p style="text-align: center;">Set measuring mode.</p> <div style="border: 1px solid black; padding: 5px; margin: 5px auto; width: fit-content;"> <ol style="list-style-type: none"> <li>0) Strain</li> <li>1) Voltage</li> </ol> </div> </div> <p>Press [0] or [1] key to determine the measuring mode.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <p>4. Set measuring range.</p>                                                                                                    | <p>Select menu items in due order.</p> <p>→ 2) Conditions</p> <p>→ 1) Channel Cond</p> <p>→ 3) Range</p>     | <div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: fit-content;"> <p style="text-align: center;">Set measuring range.</p> <div style="border: 1px solid black; padding: 5px; margin: 5px auto; width: fit-content;"> <ol style="list-style-type: none"> <li>0) 500 <math>\mu\text{m}/\text{m}</math></li> <li>1) 1 <math>\text{k}\mu\text{m}/\text{m}</math></li> <li>2) 2 <math>\text{k}\mu\text{m}/\text{m}</math></li> <li>3) 5 <math>\text{k}\mu\text{m}/\text{m}</math></li> <li>4) 10 <math>\text{k}\mu\text{m}/\text{m}</math></li> <li>5) 20 <math>\text{k}\mu\text{m}/\text{m}</math></li> <li>6) 50 <math>\text{k}\mu\text{m}/\text{m}</math></li> <li>7) OFF</li> </ol> </div> </div> <p>Select measuring range with [<math>\uparrow</math>] or [<math>\downarrow</math>] key and press [ENTER] key to determine the setting or press the number key.</p> |

|                                                                                                                             |                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>5. Set high pass filter.</p>                                                                                             | <p>Select menu items in due order.</p> <p>→ 2) Conditions</p> <p>→ 1) Channel Cond</p> <p>→ 4) Hipass Filter</p> | <div data-bbox="1107 176 1422 416"> <p>Set high pass filter.</p> <div data-bbox="1131 255 1398 394"> <p>0) OFF</p> <p>1) 0.2 Hz</p> <p>2) 1 Hz</p> </div> </div> <p>When using high pass filter (input AC coupling), select 0.2 or 1 Hz and press [ENTER] key. When using no high pass filter (input DC coupling), select "OFF." (Default is set to "OFF.")</p>                          |
| <p>6. Set low pass filter.</p>                                                                                              | <p>Select menu items in due order.</p> <p>→ 2) Conditions</p> <p>→ 1) Channel Cond</p> <p>→ 5) Lopass Filter</p> | <div data-bbox="1107 618 1417 1043"> <p>Set low pass filter.</p> <div data-bbox="1123 685 1401 1021"> <p>0) FLAT</p> <p>1) 10 kHz</p> <p>2) 3 kHz</p> <p>3) 1 kHz</p> <p>4) 300 Hz</p> <p>5) 100 Hz</p> <p>6) 30 Hz</p> <p>7) 10 Hz</p> </div> </div> <p>Set low pass filter of the target channel. Select the appropriate frequency and press [ENTER] key to determine the setting.</p> |
| <p>7. Conduct balance.</p> <p>When measuring mode of the target channel is set to "Voltage," this item is not eligible.</p> | <p>Select menu items in due order.</p> <p>→ 2) Conditions</p> <p>→ 1) Channel Cond</p> <p>→ 6) BAL ON/OFF</p>    | <div data-bbox="1107 1227 1417 1440"> <p>Set balance ON/OFF.</p> <div data-bbox="1131 1305 1398 1417"> <p>0) ON</p> <p>1) OFF</p> </div> </div> <p>Set whether or not balance is conducted (ON/OFF) to the target channel. Select the appropriate item and press [ENTER] key to determine the setting.</p>                                                                               |
| <p>8. Conduct calibration.</p>                                                                                              | <p>Select menu items in due order.</p> <p>→ 2) Conditions</p> <p>→ 1) Channel Cond</p> <p>→ 7) CAL ON/OFF</p>    | <div data-bbox="1107 1637 1417 1850"> <p>Set CAL ON/OFF.</p> <div data-bbox="1131 1715 1398 1827"> <p>0) ON</p> <p>1) OFF</p> </div> </div> <p>Set whether or not calibration is conducted (ON/OFF) to the target channel. Select the appropriate item and press [ENTER] key to determine the setting.</p>                                                                               |

|                                                                                                                                                                                                                                                                                                                         |                                                                                                              |                                                                                                                                                                                                              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9. Set CAL range.                                                                                                                                                                                                                                                                                                       | <p>Select menu items in due order.</p> <p>→ 2) Conditions</p> <p>→ 1) Channel Cond</p> <p>→ 8) CAL Range</p> | <div> Set CAL range. <div> 0) 100 %<br/> 1) 50 %<br/> 2) SHUNT </div> </div> <p>Set calibration range of the target channel. Select the appropriate item and press [ENTER] key to determine the setting.</p> |
| 10. Set calibration coefficient.<br><br><div> Set conversion coefficient (calibration coefficient) for converting measured value into physical value (engineering value) corresponding to sensors that are connected to input connector of channels. </div>                                                             | <p>Select menu items in due order.</p> <p>→ 2) Conditions</p> <p>→ 1) Channel Cond</p> <p>→ 9) CAL Coef</p>  | <div> Set calibration coefficient. <div> 1.0E-8 &lt; × &lt; 1.0E+8 </div> </div> <p>Input the determined calibration coefficient.</p>                                                                        |
| 11. Set offset.<br><br><div> Offset value is used when it is required to move in parallel the measured value by a certain amount when converting the obtained data into physical value data. For example, when a transducer having 4 to 20 mA is used, the offset is used for compensating the lower limit 4 mA. </div> | <p>Select menu items in due order.</p> <p>→ 2) Conditions</p> <p>→ 1) Channel Cond</p> <p>→ A) Offset</p>    | <div> Set offset value. <div> 1.0E-8 &lt; × &lt; 1.0E+8 </div> </div> <p>Input the determined offset value.</p>                                                                                              |
| 12. Set units.                                                                                                                                                                                                                                                                                                          | <p>Select menu items in due order.</p> <p>→ 2) Conditions</p> <p>→ 1) Channel Cond</p> <p>→ B) Unit</p>      | <div> Set physical value units relevant to input sensors. Default units are set to μm/m, V, etc. according to conditioner types and measuring modes. </div>                                                  |

Unit List

| μm/m | ε      | mV     | V      | mA       | A        | mm       | cm    |
|------|--------|--------|--------|----------|----------|----------|-------|
| m    |        | ° F    | gf/cm2 | kgf/mm2  | kgf/cm2  | kgf/m2   | mmHg  |
| kPa  | MPa    | g      | kg     | ton      | gf       | kgf      | tonf  |
| N    | kgf·mm | kgf·cm | kgf·m  | Nm       | OHM      | kOHM     | MOHM  |
| %    | dB     | ppm    | cm/s   | m/s      | m/min    | km/h     | Hz    |
| kHz  | MHz    | °      | deg    | rad      | kN       | kNm      | kW    |
| rpm  | cm/s2  | m/s2   | G      | daN      | mile/h   | *100kpa  | deg/s |
| msec | sec    | min    | hour   | USERDEF1 | USERDEF2 | USERDEF3 |       |

(Note) “USERDEF1” to “USERFEF3” are reserved for user defined units

|                                                                                                                                                                                                           |                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>13. Select measuring mode.</p> <p>Set the appropriate measuring mode such as manual mode, trigger mode, etc. for measurement of recorded data. For details, see “4-2-1” in the Instruction Manual.</p> | <p>Select menu items in due order.</p> <p>→ 2) Conditions</p> <p>→ 2) Meas Cond</p> <p>→ 1) Meas Mode</p> | <div style="border: 1px solid black; padding: 10px;"> <p>Select measuring mode</p> <div style="border: 1px solid black; padding: 5px;"> <p>0) Manual</p> <p>1) Manual<br/>(Set the number of recorded data)</p> <p>2) Interval</p> <p>3) Analog trigger</p> <p>4) Complex trigger</p> </div> </div> <p>Select the desired measuring mode with [↑] or [↓] key and press [ENTER] key to determine the selection or press the relevant number.</p> |
| <p>14. Set sampling frequency.</p> <p>Set sampling frequency. The determined sampling frequency is commonly used for all the channels.</p>                                                                | <p>Select menu items in due order.</p> <p>→ 2) Conditions</p> <p>→ 1) Meas Cond</p> <p>→ 5) Sampling</p>  | <div style="border: 1px solid black; padding: 10px;"> <p>Select types of sampling frequency.</p> <div style="border: 1px solid black; padding: 5px;"> <p>0) 1, 2, 5 system clock</p> <p>1) 2n system clock</p> </div> </div> <p>* For options, see “4-2-2” in the Instruction Manual</p>                                                                                                                                                        |
| <p>15. Set data file.</p>                                                                                                                                                                                 | <p>Select menu items in due order.</p> <p>→ 1) Measurement</p> <p>→ 6) Data File</p>                      | <div style="border: 1px solid black; padding: 10px;"> <p>1) File Name</p> <p>2) File No.</p> <p>3) File Title</p> <p>0) End</p> </div> <p>Set items from 1) to 3) and determine the file for saving recorded data.</p>                                                                                                                                                                                                                          |
| <p>16. Set display mode.</p> <p>Display mode (graph types) of the recorded data is set for monitoring data.</p>                                                                                           | <p>Select menu items in due order.</p> <p>→ 1) Measurement</p> <p>→ 1) Mode</p>                           | <div style="border: 1px solid black; padding: 10px;"> <p>Set display mode.</p> <div style="border: 1px solid black; padding: 5px;"> <p>0) Y-Time graph</p> <p>1) Y-Time (All) graph</p> <p>2) Y-Time (Div) graph</p> <p>3) Numeric display</p> <p>4) Bar graph</p> <p>5) X-Y graph</p> </div> </div> <p>Select the desired display mode with [↑] or [↓] key and press [ENTER] key to determine the selection or press the relevant number.</p>  |

|                                                                                                                                                            |                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 17. Set balance.                                                                                                                                           | <p>Select menu items in due order.</p> <p>→ <span style="border: 1px solid black; padding: 2px;">1) Measurement</span></p> <p>→ <span style="border: 1px solid black; padding: 2px;">4) Balance</span></p>           | <div style="border: 1px solid black; padding: 10px; text-align: center;"> <p>Conduct balance.<br/>Execute balance. OK?</p> <div style="border: 1px solid black; padding: 5px; margin: 0 auto; width: 50px;">Yes</div> </div> <p>Press [ENTER] key to start balance.</p>                                                        |
| 18. Measure strain value and sensor output.                                                                                                                | <p>Select <span style="border: 1px solid black; padding: 2px;">1) Measurement</span> from the main menu.</p> <p>→ Press [REC/PAUSE] key to start recording data.</p> <p>Press [Stop] key to stop recording data.</p> | <p>1) Confirm the recorded data and press [ENTER] key.</p> <div style="border: 1px solid black; padding: 10px;"> <p>1) Channel</p> <p>2) Delete REC Data</p> <p>3) Next Channel</p> <p>4) Prev Channel</p> <p>0) End</p> </div> <p>Then, the above menu appears to allow you to confirm the recorded data of all channels.</p> |
| <p>Change the load and repeat operations in the above item 18.</p> <p>To start the measurement with no-load state, operate the EDX-2000A from item 17.</p> |                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                |