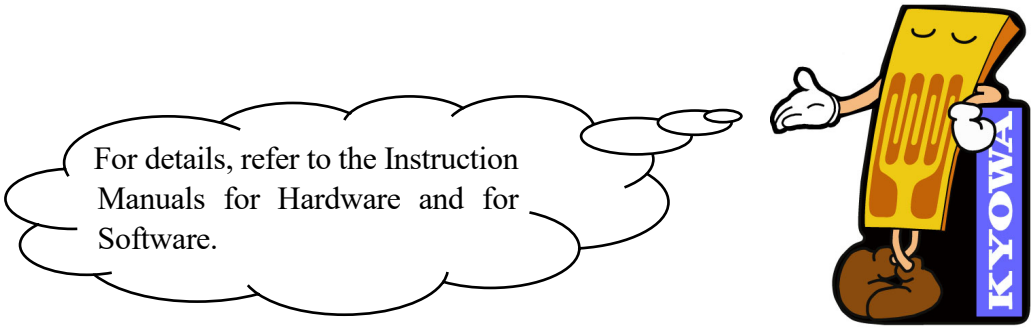
IM-A-1092B December 2019

Simplified Instruction Manual
MEMORY RECORDER/ANALYZER

EDX-5000A



KYOWA

Safety Precautions

- Use the EDX-5000A in the specified operating temperature range of 0 to 40 °C.
  Use at temperature exceeding the specified range may cause low performance and system failure.
  If using under direct sunlight or in a cold place is inevitable, prepare a sunscreen or take proper measures to keep it warm.
- Use the EDX-5000A in the specified operating humidity range of 20 to 80%RH.
  Use in a humid place exceeding the specified range or expose to water may cause low performance and system failure.
- About cleaning
  When the EDX-5000A is getting dirty, clean it with a dry soft cloth. If dust or the like is adhered inside the main body, clean it with air blow and do not touch the electronic parts.
- Do not use the EDX-5000A immediately after the change in the environment.
  Leave the EDX-5000A as it is to acclimate to the environment.
  Abrupt change in ambient temperature due to transportation, etc. may cause dew condensation, which may result in low performance and system failure
- When mounting the EDX-5000A in the vehicle, always set it on the car seat and securely fix it in position with a band or others. Do not directly mount it on the vehicle's chassis. Otherwise unexpected vibration or impact may be applied to the EDX-5000A. Under this circumstance, set it on a vibration isolation platform to reduce the applied vibration and impact. Be sure to use the EDX-5000A-S(E) in an area where continuous vibration and impact occur, such as in a vehicle, etc., even if the vibration and impact are within the specified range.
- Do not use the EDX-5000A in strong electromagnetic field.
  Use the EDX-5000A in an environment where a PC is usable.
  Use the EDX-5000A near to telemetry system, microwave oven, electronic furnace or any other equipment which generating strong magnetic field may cause low performance, erroneous operation and system failure.
- Do not use the EDX-5000A under poor condition of power supply.
  Operate the EDX-5000A within the range of 100 to 240 VAC (50/60 Hz) with power consumption of 300 VA or less, or the range of 10 to 30 VDC. Use the power supply without experiencing of instantaneous power failure and free from noise for EDX-5000A.
- Do not turn ON the power immediately after turning it OFF.
  When the power is turned OFF, do not turn ON the power until the power supply is automatically cut off. In addition, do not cut off the AC power supply or the DC power supply when operating. Or, it may damage the internal disk of the memory recorder/analyzer.
- Do not pull the connecting cables.
  Connect cables with a certain allowance of length to avoid any unwanted force at the connection parts.
  Pulling connecting cables or applying unwanted force may cause system failure or interrupt measurement.
- Take proper precautions when using a USB memory or USB device (mouse and keyboard) in an environment with vibration. Do not take measurement while the USB memory or USB device remains inserted in a vibrating environment, which may cause a system failure or PC card failure.
- Do not seal ventilation holes where a fan is located at the back and where two fans are located at the front.
  Do not seal ventilation holes located at the top and bottom too. Failure in heat radiation causes the increase of temperature inside the EDX-5000A which may lead to low performance and system failure.
- The built-in battery which acts as countermeasure against instantaneous power failure is Ni-MH battery. It is a battery pack with 12 batteries (type: HR-4/5 FAUP) connected in series. Recycle or discard your battery in a responsible manner or contact KYOWA or our representatives.
- Charge the built-in battery which acts as countermeasure against instantaneous power failure under temperature range of 0 to 40℃ or the battery may not be fully-charged and deterioration is accelerated
- If the EDX-5000A is not being used for a long period, the built-in battery which acts as countermeasure against instantaneous power failure should first be fully-charged. The battery discharges gradually over time naturally even if the EDX-5000A is not being used. If the battery is left almost empty, long-term storage may accelerate self-discharge of battery and lead to over-discharging. The battery can no longer be used and have to be replaced if it had been over-discharged. In addition, if the EDX-5000A has to be stored for a long term period, the self-discharge rate and deterioration rate of the battery are closely related to the storage temperature. It is recommended to store the battery at 25℃ or lower temperature.

Safety Precautions

- Use the EDX-5000A in area where elevation is 2000 m or below. (CE marking)
- The handle of the EDX-5000A is only for the purpose of support. When transporting, either picking up and carrying the case with both hands or carrying it on a trolley, etc. is recommended.
- When carrying or transporting EDX-5000A, wear safety shoes.
- Avoid installing sensors and measuring using EDX-5000A near a welding machine.
  Failure to do so will pose the risk of error in data, erroneous operation and system failure.
- Do not disassemble or remodel the EDX-5000A.
  Failure to do so will pose the risk of electric shock and system failure. The warranty does not cover any damage or defective parts resulted from disassembling or remodeling.
- The EDX-5000A limits the number of mounting of CFV-40A.
  The number of CFV-40A that able to be mounted is up to 2 units.

Safety Precautions

- The operating system of the EDX-5000A is Windows Embedded 10 IoT Enterprise. KYOWA conducted virus scan by using the antivirus software published from Trend Micro Incorporated before shipment, and it is confirmed that the EDX-5000A is not infected with virus. However, anti-virus software is not installed to the EDX-5000A. Therefore, there is a chance that the EDX-5000A may be infected by a virus via memory devices such as USB memory stick or from network. Virus infection of EDX-5000A not only may cause erroneous operation of user's computer but also may infect others. Carefully read and fully understand the following precautions before using the EDX-5000A.

1. To prevent infection from computer virus

- Do not install the software other than specified to the EDX-5000A.
- Do not activate unrelated software other than EDX-5000A Software.
- Scan a target USB memory stick before using.
- Connect the EDX-5000A to a highly reliable network environment only Do not connect a network cable unless it is necessary.
- Do not set folder as shared folder unless it is necessary.
- After using a USB memory or connecting the EDX-5000A to network, regularly run a virus scan on the EDX-5000A.

2. To detect computer virus

There are two methods of virus detecting.

◆ Use another PC.

1) Connect the EDX-5000A and a PC which had installed with anti-virus software with a network cable.
2) Set a drive or folder of the EDX-5000A as shared drive or folder before virus check.
   Run a virus check for the EDX-5000A from the PC.

◆ Conduct virus check by the EDX-5000A.

1) Download a virus check program with another PC and copy the virus check program to a USB memory stick. It is recommended to use the USB memory stick with write-protected function. In addition, be sure to use the latest virus check program.
2) Connect a mouse, keyboard, and USB memory stick to the EDX-5000A.
   Run a virus scan on the EDX-5000A by using the downloaded virus check program.

3. If infected by virus

Contact KYOWA or our representatives for system restoration and note that it is not a free service.

4. Security patches and service packs of Microsoft

If you connect the EDX-5000A to the internet, you can install the security patches and service packs of Microsoft by using the Windows Update. However, in case of this installation had caused the unstable of the operation of EDX-5000A, as the operating environment had changed, we shall not be liable for any erroneous operation of EDX-5000A. Therefore, installing the software at your own risk. In addition, if the operation of EDX-5000A becomes unstable after installing the software, restore the EDX-5000A.

5. Installing anti-virus software

Generally, antivirus software can cause a dramatic increase in CPU usage since it is loaded in memory at all time and it monitors the reading and writing of files and network. In addition, it is necessary to connect to the Internet all the time for updating the antivirus pattern file to the latest one. If such actions are taken during measurement, the EDX-5000A may not measure the data correctly. Therefore, we did not install the antivirus software on the EDX-5000A. However, if you really need to install antivirus software, fully understand the following items and install the anti-virus software at your own risk.

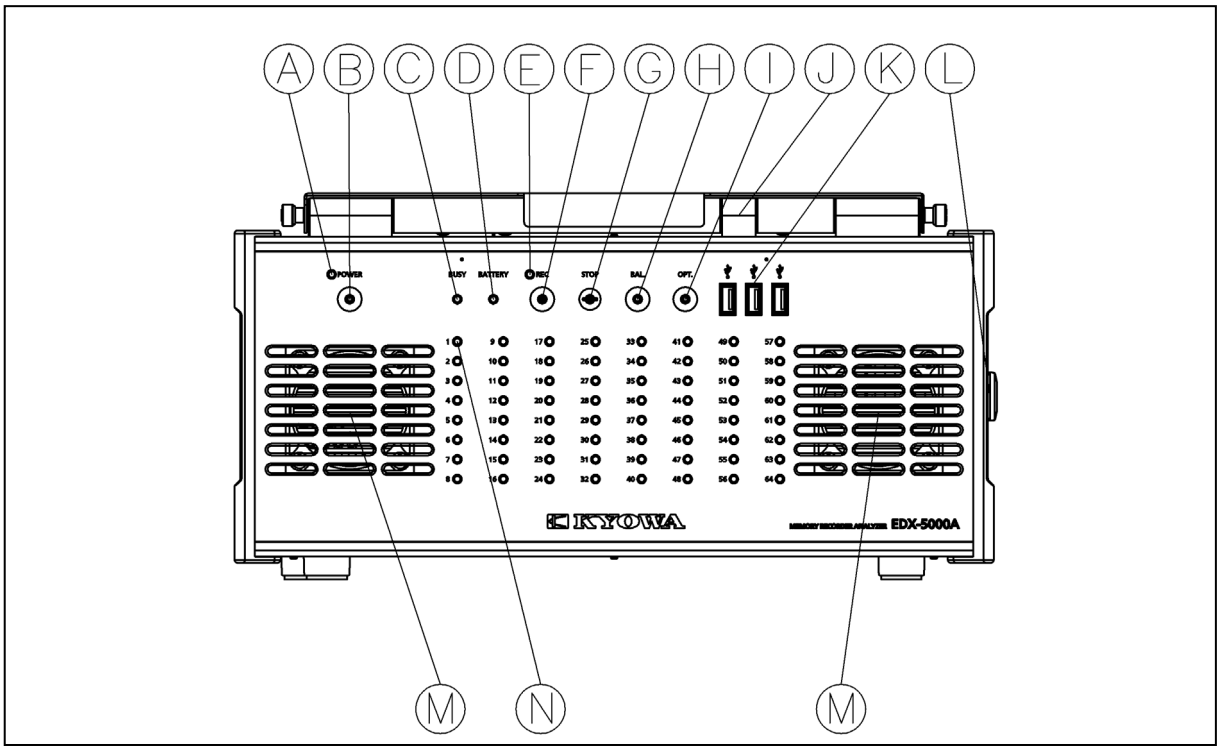
Safety Precautions

- If you have installed antivirus software, we shall not be liable for any erroneous operation of EDX-5000A.
  If the operation of EDX-5000A becomes unstable after installing the software, restore the EDX-5000A.
- Install the antivirus software compatible to the Windows Embedded 10 IoT Enterprise.
- It is recommended to turn OFF the features of anti-virus software such as real-time protection, auto-protect option during measurement. Or, the EDX-5000A may not measure data correctly.
- Quit the EDX-5000A software before updating a pattern file.
- If the EDX-5000A is send to KYOWA because of an internal driver failure or for periodic replacement, **customer installed software are all deleted** since we newly setup the EDX-5000A. If there is any necessary file in the EDX-5000A, you should backup the file before sending it to KYOWA.
- It is recommended to conduct pretest based on the same measuring conditions before measurement.

Conduct pretest before measurement since effect of the antivirus software is not known.

1. CONTROLS AND INDICATORS

1-1 FRONT



A: POWER LED — Lights up in green after turning ON the power. The POWER LED lights out after turning OFF the power. In addition, the POWER LED blinks in orange alternately during discharging of built-in battery (during instantaneous power failure or blackout). Refer to table 1-1.

B: POWER switch — Press and hold this switch for more than 1 second to turn on the power. If you press the "POWER" switch for 2 seconds or longer under power on state of EDX-5000A, the internal setting information is stored before the EDX-5000A is turned off.

MEMO

A short buzzer sound rings two times when the power is turned on. Also, a long buzzer sound rings three times when the power is turned off, and POWER LED blinks green.

NOTE

When the built-in battery is fully discharged, do not disconnect the power plug from the power outlet when the POWER is on or during shutting down. Failure to do so may destroy the internal disk and disable the EDX-5000A from starting up again.

C: BUSY LED — Lights up in green while accessing the internal disk. Refer to table 1-1.

D: BATTERY LED — Lights up in green while charging the built-in battery. It is lighted out when the built-in battery is fully charged. Refer to table 1-1.

E: REC LED — Lights up in green during monitoring, in red during recording and blinks in red when stop recording, trigger waiting, and interval waiting. Refer to table 1-2.

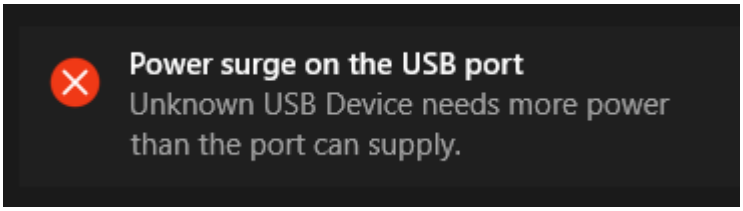
F: REC switch — Starts or stops the recording.

G: STOP switch	Stops the monitoring or recording.
H: BAL. switch	Press the BAL switch for 1 second or longer to conduct balance adjustment.
I: OPT. switch	Can set the function of the “OPT. switch” with the ETA-55A.
J: Display	Touch panel compatible display.
K: USB connector	USB2.0 connector. However, this front panel USB connector is restricted to a suppliable current of approximately 100 mA. Use the USB connector on the rear panel when using external HDDs and other devices that require a current of 100 mA or more.

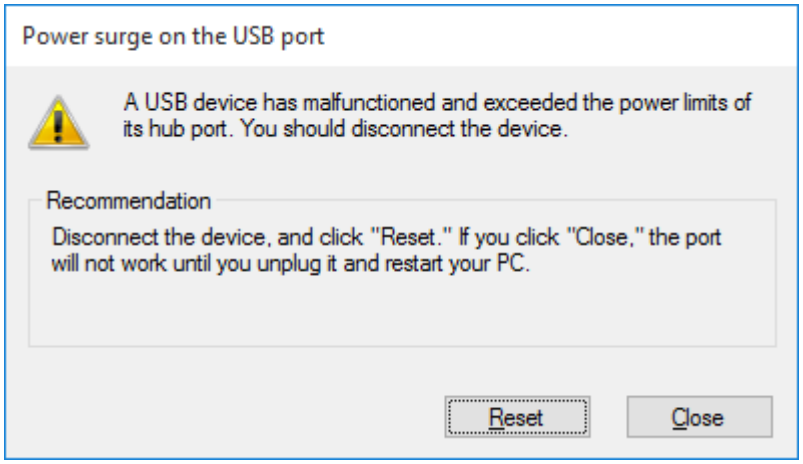
MEMO

If you have accidentally connected a device that requires a current of 100 mA or more to the USB connector on the front panel, follow the steps described below to reset the USB port. Without resetting the USB port, you will not be able to use the USB port on the front panel until the EDX-5000A has been restarted.

1) Click the “Power surge on the USB port” warning when it appears in the bottom right of the screen.



2) Remove the connected device, and then click Reset.



L: Handle　　Handle.
M: Front fan　　Ventilating suction fan on the front panel.
N: CH LED　　Indicates the status of channels. Refer to table 1-2.

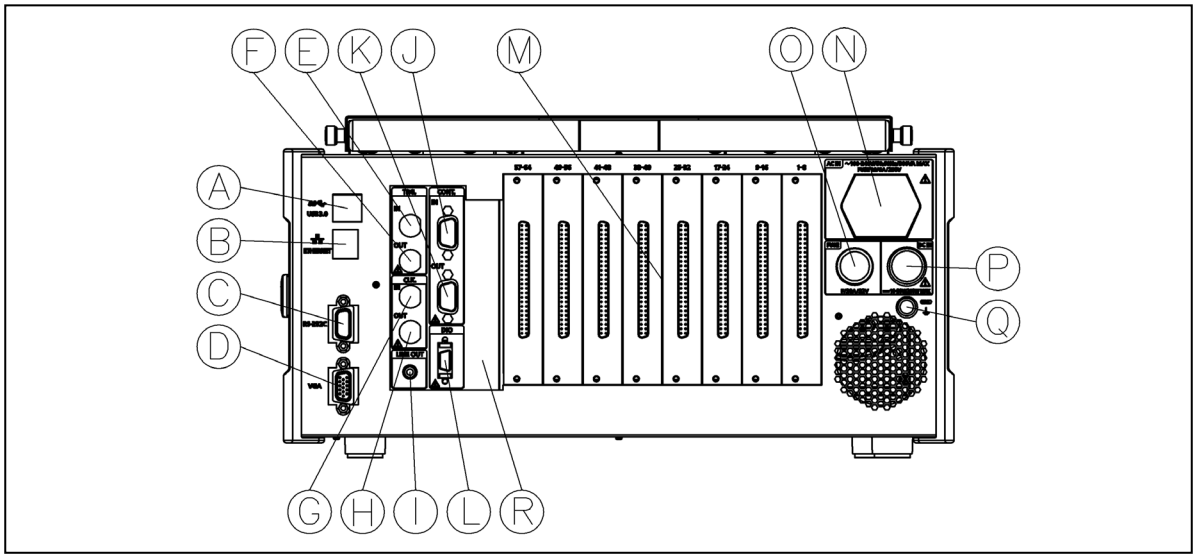
Table 1-1　　LEDs status part 1

Status \ LED		A：POWER LED	D：BATTERY LED	C：BUSY LED
Green	ON	Power ON state.	Charging the built-in battery.	Accessing to the internal disk.
	Blinks	Power OFF is being prepared.	Discharging the built-in battery. (During refresh)	
Orange	ON			
	Blinks	Discharging the built-in battery. (During power failure)		
Red	ON			
	Blinks	Voltage drop in the DC power supply (At less than approx. 11 V)		
OFF		Power OFF state.	The built-in battery is fully charged.	

Table 1-2　　LEDs status part 2

Status \ LED		E：REC LED	N：CH LED
Green	ON		Normal (Measurement OK)
	Blinks	Monitoring	Calibration output in progress
Orange	ON		Null balancing in progress
	Blinks		Null balancing not successful
Red	ON	Recording	Sensor input overflow
	Blinks	Pausing Trigger waiting Interval waiting	The sensor input overflow is solved. Signal within range is entered.
OFF			Measurement OFF Without conditioner card installed

1-2 REAR



A: USB connector	USB3.0 connector.
B: LAN connector	LAN connector
C: RS-232C connector	For the serial communication. This serial communication port is for use for adjustment and maintenance, and it cannot be used for other purposes.
D: VGA connector	Used for connecting the external display.
E: TRG IN connector	For the external trigger measurement. Starts recording by inputting the trigger signal. (H: 2.0 to 5.0 V, L: 0 to 0.8 V)
F: TRG OUT connector	Outputs trigger signal when triggered. (H: 5 V, L: 0 V)
G: CLK IN connector	Used for operating the EDX-5000A with the external clock signal. (H: 2.0 to 5.0 V, L: 0 to 0.8 V)
H: CLK OUT connector	Sampling clock is divided and output. (H: 5.0 V, L: 0 V)
I: LINE OUT connector	External speaker connector
J: CONT IN connector	Used for a dedicated remote control unit or for synchronized operation of multiple units.
K: CONT OUT connector	Used for synchronized operation of multiple systems.
L: DIO connector	Connector for digital input/output. 8 bits and TTL level input/output is possible.
M: Conditioner slots	Slots for conditioner cards. There are 8 slots for the 64 CH model and 10 slots for the 80 CH model.
N: AC inlet socket	This AC power supply connector should be connected to the AC power outlet with the AC power cable supplied with the EDX-5000A.
O: Fuse	Fuse for DC power.
P: DC power supply connector	DC power supply connector. Voltage range of the input of power supply is 10 to 30 VDC.

Q: GND terminal	Always ground the GND terminal of the EDX-5000A.
R: Optional slot	Slot for adding the EGPC-50A Regarding to installation of the EGPC-50A, contact the KYOWA or our representatives. For details, refer to ”6. GPS/MULTI-CHANNEL CAN OPTIONAL MODULE: EGPC-50A”.

MEMO

The GND terminal is connected to the chassis and the common of the internal circuit.

MEMO

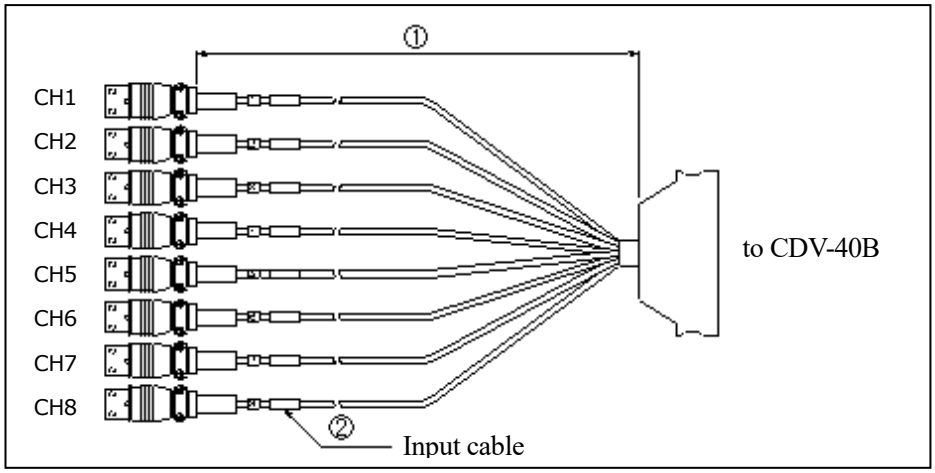
The channel No. is determined by the position where the conditioner cards is inserted.
The channel numbers are assigned from right to left as seen from the rear.

2. CONNECTING SENSOR

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

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

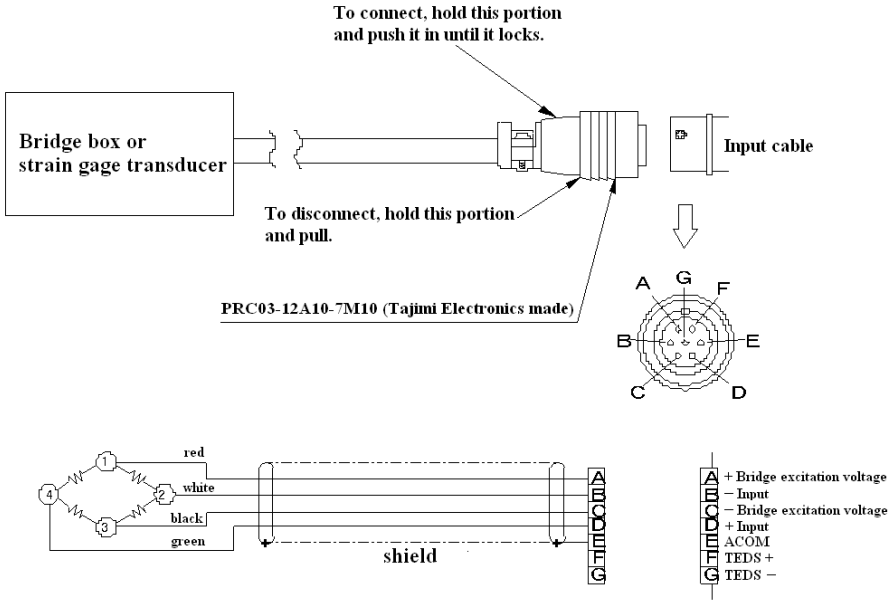
Item	Model	Cable length (Figure ①)	Color of heat shrinkable tube (Figure ②)	Item	Model	Cable length (Figure ①)	Color of heat shrinkable tube (Figure ②)
Input cable	U-40	50cm	None	Input cable	U-46	50cm	Blue
	U-41		Brown		U-47		Purple
	U-42		Red		U-48		Gray
	U-43		Orange				
	U-44		Yellow		U-38	1.5m	None
	U-45		Green		U-39	1.0m	None



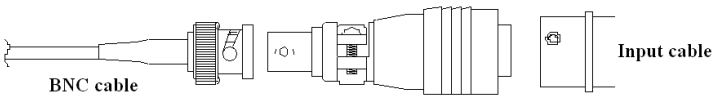
The CDV-40B can measure strain and voltage. The input cable should be connected as described below.

1) When using a strain gage or strain gage transducer

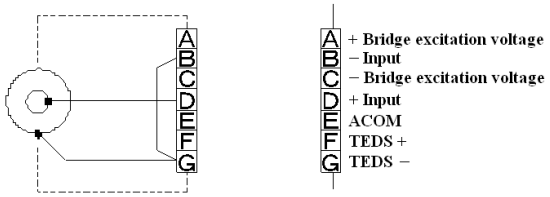
When measuring the output of the strain gage or strain gage transducer, connect the bridge box or strain gage transducer as shown in the figure at right.
Before recording the data, select the strain mode and monitor the noise. If excessive noise is measured, ground the ground terminal of the bridge box or connect it to the GND terminal of the EDX-5000A. Use either of the grounding method which results in less noise.



2) When applying an input voltage



Input conversion adapter: FV-1A (Option)

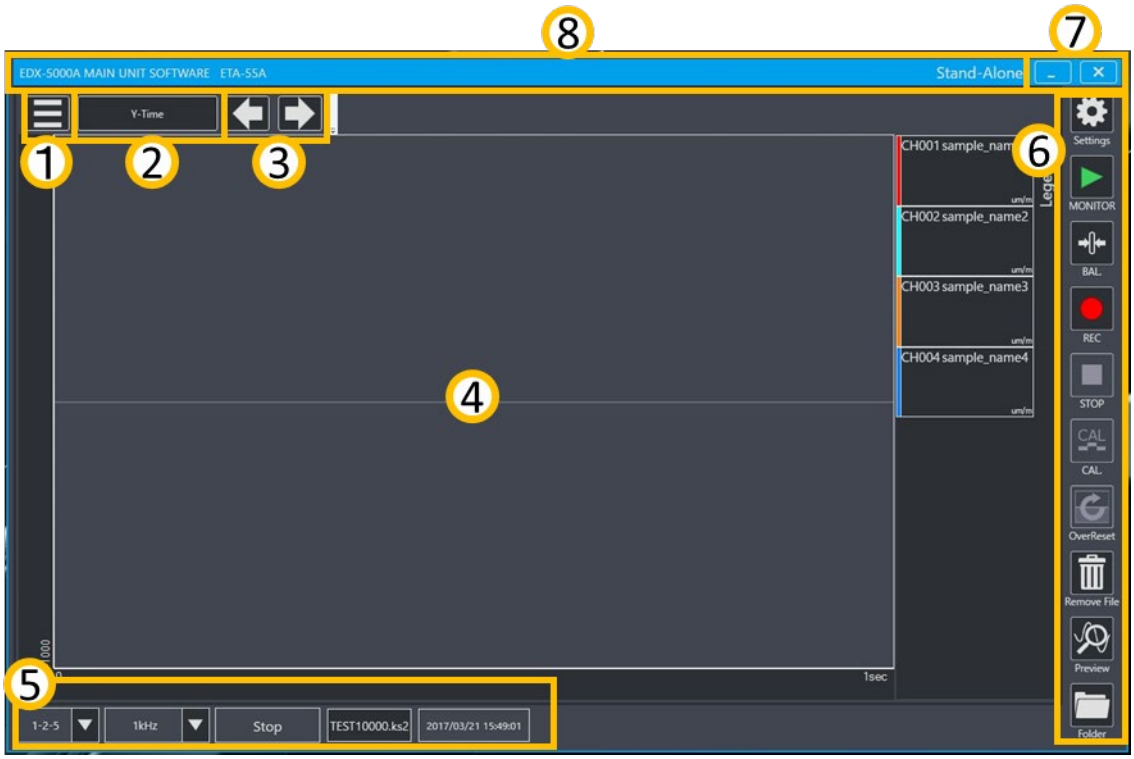


ACOM and TEDS- are common potential.

When measuring the voltage, connect an input conversion adapter (optional goods: FV-1A) to a quick fitting connector by using the BNC connector. Select the voltage mode to perform monitoring. In case of the occurrence of excessive noise, connect the negative side of the voltage signal source to the GND terminal of the EDX-5000A.

3. MAIN WINDOW

The main window shown below will display when starting up this software.



No.	Name	Function
1	Cell display settings button	Cell display settings
2	Select cell content button	Displays/set the graph/settings screen displayed
3	Change CH button	Go forward/back in order of graph display CHs.
4	Cell	Displays the graph /settings screen
5	Information bar	Displays/set(partial) recording information
6	Toolbar	Displays function buttons
7	Minimize button	Minimizes the software.
	Close button	Closes the software.
8	Title bar	Displays the software title and measuring status

4. Basic Operation of Data Recording

The basic operation of EDX-5000A is described as below.

Connecting sensors

(1) Attach the sensor on the EDX-5000A's conditioner card at the rear side of EDX-5000A.

Start-up of the EDX-5000A

Setting of Recording Conditions

(2) Tap the "Settings" button on the tool bar and select "Data File".
(3) Tap the "Reference" button in the content of "Folder", and select a save destination for data files.
(4) Set file name in the content of "Name" and set file title in the content of "Title".
(5) To change file format to CSV, tick the check box in the content of "Automatically File Conversion Settings".
(6) Tap the "Close" button to apply the changed setting.

Setting of CH Conditions
(Setting of Analog CH, Digital Input CH)

(7) Tap the "Settings" button on the tool bar and select "Analog CHs".
(8) Set the CH conditions of in-use or not of each CH, mode, range, calibration coefficient, offset, unit, etc. There are three tabs which are [Basic, Calibration, Others] in the setting page. Switchover the pages by tapping the following tabs.
(9) Select the "DIO" page and set the conditions of digital input CHs.
Set the modes from 4 types of modes [Input, Output, Remote, ***(Without setting)] for each bit.
(10) Tap the "Close" button to apply the changed setting.

Setting of Recording Conditions
(Setting of Recording Mode, Sampling Frequency, Number of Recording Data, Number of Recording, AD Format of Measuring Data, Frequency of Division Ratio of External Output Clock)

(11) Tap the "Settings" button on the tool bar and select "Recording Settings".
(12) In the content of "Mode of Recording", set the mode from 4 types of modes [Manual, Interval, Trigger, Complex Trigger].
(13) Set sampling frequency, number of recording data and number of recording.
(14) In the content of "AD Format", set the AD format from the selection of either 16 bits or 24 bits.
(15) In the content of "Division Ratio (Output Clock)", divided sampling frequency can be output as external clock.
(16) Tap the "Close" button to apply the changed setting.

Display of Window

(17) In the setting window, data displaying window will be displayed after tapping the "Close" button.

(To next page)

(From previous page)

Measuring

(18) By tapping the “MONITOR” button on the tool bar, the monitor will be under starting measuring state and data will be displayed in each window.
(19) By tapping the “REC” button on the tool bar, the data recording will be started corresponding to the recording mode.
(20) By tapping the “STOP” button on the tool bar, the data recording in correspond to the number of recording data will be stopped and back to the state of monitoring.
(21) In the state of monitoring, tap the “STOP” button once again to stop measuring and it will be under stopped state now.

Data Confirmation

(22) By tapping the “Preview” button on the tool bar, data confirmation window will be displayed.
(23) The maximum and minimum value of data for one of the CHs can be confirmed from [Peak/Valley] tab page.
(24) The maximum and minimum value of data for multiple of CHs can be confirmed from [Multiple] tab page.
(25) To delete the latest recorded data file, tap the “Remove File” on the tool bar.
To start measuring again, tab the “MONITOR” button. (Refer to (18))

Data Regeneration

(26) For displaying details of recording data, opening or changing of data file and data analysis, tab the “Settings” on the tool bar and select “General” page.
(27) By selecting “DAS-200A” in the content of “Switch to any application” or tapping “DAS-200A” button on the tool bar, data generation will be conducted.

End operation of EDX-5000A

5. LIST OF SETTING ITEMS OF CONDITIONER CARDS

The mode, range low pass filter, high pass filter, and CAL range of every conditioner card are displayed as follows.

Card	Mode	Range	Low pass filter	High pass filter	CAL range
CDV-40B/A CDV-40B/A-F	Strain	500 μm/m 1 kμm/m 2 kμm/m 5 kμm/m 10 kμm/m 20 kμm/m 50 kμm/m OFF	FLAT 10 kHz 3 kHz 1 kHz 300 Hz 100 Hz 30 Hz 10 Hz AUTO * * CDV-40B/A-F only	OFF 0.2 Hz 1 Hz	100% 50% SHUNT
	Voltage	0.1V 0.2V 0.5V 1.0V 2.0V 5.0V 10.0V OFF			100% 50%
CFV-40A	ZC/S ZC/N TTL	50 Hz 100 Hz 500 Hz 1 kHz 2 kHz 5 kHz 10 kHz 20 kHz OFF	None	OFF ON	100% 50%
CTA-40A	K (ON) K (OFF)	240 ºC 480 ºC 1230 ºC OFF	None	None	100% 50% CHECK
	T (ON) T (OFF)	210 ºC 400 ºC OFF			
CCA-40A CCA-40A-F	Voltage	20 mV 50 mV 100 mV 200 mV 500 mV 1000 mV 2000 mV 5000 mV OFF	FLAT 10 kHz 3 kHz 1 kHz 300 Hz AUTO * * CCA-40A-F only	None	DC100% DC50% AC100% AC50%
DPM-42B/A DPM-42B/A -F DPM-42B-I DPM-42B-I-F	BV (2.0 V)	200 μm/m 500 μm/m 1 kμm/m 2 kμm/m 5 kμm/m 10 kμm/m 20 kμε OFF	FLAT 1 kHz 300 Hz 100 Hz 30 Hz 10 Hz AUTO * * DPM-42A-F, DPM-42B-F, DPM-42B-I-F only	None	100% 50% SHUNT
	BV (0.5 V)	1 kμm/m 2 kμm/m 5 kμm/m 10 kμm/m 20 kμm/m 50 kμm/m OFF			

Card	Mode	Range	Low pass filter	High pass filter	CAL range
CVM-40A	Strain (2V)	5000μm/m 10kμm/m 50kμm/m 100kμm/m 500kμm/m OFF	FLAT 3kHz 1kHz 300Hz 100Hz 30Hz AUTO	OFF 0.2Hz 1Hz	100% 50% SHUNT
	Strain (5V)	5000μm/m 10kμm/m 50kμm/m 100kμm/m 200kμm/m OFF			
	Voltage Voltage (2V) Voltage (5V)	1.0V 5.0V 10.0V 50.0V OFF			100% 50%
	Piezoelectric	100mV 500mV 1000mV 5000mV OFF		None	DC100% DC50%
CVM-41A	Strain (2V)	2000μm/m 5000μm/m 10kμm/m 20kμm/m 50kμm/m 100kμm/m 200kμm/m 500kμm/m OFF	FLAT 3kHz 1kHz 300Hz 100Hz 30Hz AUTO	OFF 0.2Hz 1Hz	100% 50% SHUNT
	Strain (5V)	2000μm/m 5000μm/m 10kμm/m 20kμm/m 50kμm/m 100kμm/m 200kμm/m OFF			
	Strain (10V)	2000μm/m 5000μm/m 10kμm/m 20kμm/m 50kμm/m 100kμm/m OFF			
	Voltage Voltage (2V) Voltage (5V)	1.0V 2.0V 5.0V 10.0V 20.0V 50.0V OFF			100% 50%
	Piezoelectric	100mV 200mV 500mV 1000mV 2000mV 5000mV OFF		None	DC100% DC50%

Card	Mode	Range	Low pass filter	High pass filter	CAL range
CDV-44AS	Strain (ON) Strain (OFF)	500με 1kμε 2kμε 5kμε 10kμε 20kμε OFF	FLAT 1kHz 300Hz 100Hz 30Hz 10Hz	OFF 0.2Hz	100% 50% SHUNT
	Voltage (ON) Voltage (OFF)	1.0V 2.0V 5.0V 10.0V 20.0V 50.0V OFF			100% 50%
CDA-44AS CDA-45AS	Strain (ON) Strain (OFF)	500με 1kμε 2kμε 5kμε 10kμε 20kμε OFF	FLAT 100Hz 30Hz 10Hz 3Hz 1Hz	OFF 0.2Hz	100% 50% SHUNT
	Voltage (ON) Voltage (OFF)	1.0V 2.0V 5.0V 10.0V 20.0V 50.0V OFF			100% 50%
AD-40AS AD-40AS-F	Voltage	5.0V 10.0V OFF	FLAT 10kHz 3kHz 1kHz 300Hz 100Hz 30Hz 10Hz AUTO * * AD-40AS-F only	None	TEST