

EDX-3000A

Memory Recorder/Analyzers



High-Speed Sampling at 200kHz/32 Channels (100kHz/64 Channels) and Simultaneous Recording of Moving Image with a High-Speed Camera

- Conditioner Cards Selectable for Specific Applications
- Up to 8 cards can be mounted for measurement of a maximum of 64 channels
- Highly User-Friendly Operation
- Simultaneous recording of measurement data and moving images
- Versatile Real-Time Processing Capability
- Transformation into All-In-One Logger
- Operable without a Monitor and Keyboard
- Easy-to-Confirm Channel Status with LEDs
- Online Remote Control of Multiple Instruments
- External I/O Connectors (BNC)
- Remote Control Unit RCU-42A (Option)
- Built-in Backup Battery
- Time synchronized measurement (option)

EDX-3000A is an advanced stationary measuring instrument having sophisticated features and high-speed processing capabilities.

It is the highest-end model of EDX Series. Both online and offline control is available, and with an optional display and keyboard, it can be used as an all-in-one logger.

Software having the similar functionality with well-received dynamic data acquisition software DCS-100A is installed in this model for monitoring and recording measurement data in a variety of graph windows, and at the same time, enabling simultaneous recording of measurement data and moving images as well as rosette analysis and other arithmetic operations

●Conditioner cards. (Refer to Page 3-64)

Strain/Voltage measuring card	CDV-40B/40B-F
Dynamic Amplifier card	DPM-42A/42A-F
Thermo couple card	CTA-40A
F/V converter card	CFV-40A
Charge Amplifier card	CCA-40A/40A-F
CANcard	CAN-40A/41A

Hardware Specifications

Model :	EDX-3000A-H: Hard disk drive (HDD) 100GB EDX-3000A-S: Solid state drive (SSD) 30GB
Conditioner cards :	CDV-40A/B(-F), DPM-42A(-F), CTA-40A, CFV-40A, CCA-40A(-F), CAN-40A, CAN-41A
Input channels :	Max. 64 (CDV-40B x 8)
Analog input :	See specs of respective conditioner cards for details.
Digital input :	32 bits (TTL level, contact input)
Voice input :	1 channel (voice memo entered during recording can be saved with measurement data)
Sampling system :	Simultaneous sampling of all channels
Sampling frequency :	1-2-5 system 1 Hz to 200 kHz for up to 32-channel data acquisition 1 Hz to 100 kHz for up to 64-channel data acquisition 1 Hz to 10 kHz for real-time simultaneous data processing or CAN data measurement 2 ⁿ system 2 Hz to 131072 Hz for up to 32-channel data acquisition 2 Hz to 65536 Hz for up to 64-channel data acquisition 2 Hz~8192 Hz for real-time simultaneous data processing or CAN data measurement
Display :	Channel status LED (OVER value can be specified for each channel) REC/PAUSE LED LCD for various status display (20 char. x 2 lines)
Operation keys :	Front mounted REC, STOP, BAL, OPT.
External control connectors :	CONT IN, CONT OUT (remote control synchronous operation)
External I/O connectors :	External trigger TRG IN, TRG OUT External clock CLK IN, CLK OUT (output at any frequency division ratio) Operation status output READY
External device interface :	Mini DIN 6-pin for keyboard Mini DIN 6-pin for mouse 15-pin VGA connector for external display USB 2.0 ports, 2 on the front and 6 on the rear LAN port 10/100/1000BASE-T
Power supply :	100 to 240 VAC, 50/60 Hz Built-in battery for instantaneous power failure
Current consumption :	2.0 A (For 100 VAC, CDV-40A/B x 8)
Operating temperature & humidity range :	0 to 40°C, 20 to 80%RH (noncondensing)
Storage temperature range :	-20°C to 60°C
Vibration resistance :	49.0 m/s ² (5 G), 5 to 55 Hz (when not operating) 29.4 m/s ² (3 G), 5 to 55 Hz (when operating) EDX-3000A-H: 9.8 m/s ² (1 G), 10 to 200 Hz (when operating) EDX-3000A-S: 19.6 m/s ² (2 G), 10 to 200 Hz (when operating)
Shock resistance :	196.1 m/s ² (20 G)/11 ms
Dimensions :	440(W)×186(H)×341(D)mm (excluding LCD and protrusions)
Weight :	Approx. 13.8kg (mainframe only)

Optional Accessories Detachable 15-in LCD EMON-30A, Keyboard, Mouse, Remote control unit RCU-42A (p.1)

※The DC24V specification can be manufactured.

●Remote Control Unit RCU-42A (Option)

The front panel operation of the mainframe can be performed on this remote control unit. With a buzzer from the unit, an alarm sound can be clearly heard even though the sound from the mainframe is missed.



Control function :	REC/PAUSE STOP BAL (balancing) OPT. (optional function) VOICE MEMO (recording with the built-in microphone)
Indication :	Recording, pausing and balancing are indicated with LED.
Cable length :	1.5m





■ **Measuring Condition Setting**

Measuring channel conditions

Measurement : ON/OFF, measuring modes, range, high-pass filter, low-pass filter, balance ON/OFF, CAL range, CAL ON/OFF, calibration coefficient, offset, unit, channel name, measuring range, rated capacity, rated output, numeric display digits (any display items can be selected)

Number of recordable data items :

Up to remaining disk space of built-in memory (sampling frequency 1 to 10kHz) 2 to 2,000,000,000 data items (sampling frequency 10001Hz to 200kHz)

Manual measurement : Recording from REC to STOP, or designated number of data items from REC

Interval measurement : Automatic recording according to designated starting time and recording interval

Trigger measurement : Recording starts and stops according to designated trigger conditions.

Common trigger conditions :

End trigger : Settable

Delay amount : Max. 4,194,304 data items/channel for both start and end

* Delay amount depends on the sampling frequency and number of measuring channels.

Analog trigger conditions :

Trigger channel : Any 1 channel

Trigger level : An engineering value

Trigger slope : Up/Down

Digital trigger conditions :

Trigger bit : Any 1 bit

Trigger level : 0, 1

External trigger conditions :

Trigger slope : Up/Down

Complex trigger conditions :

Trigger source : Any 4 analog/digital channels, an external trigger channel, or a manual trigger channel

AND/OR : AND/OR can be used for analog trigger, digital trigger and external trigger.

Trigger level : An engineering value is set for the analog channel, and 0 or 1 for the digital channel.

Trigger slope : Up/Down

TEDS Information : TEDS Information is read and channel conditions are set, according to the read conditions automatically.

■ **Measuring Operations**

Monitor measurement, recording start, pause, stop balancing, CAL output, etc.

Real-time processing :

Monitoring and recording of data can be done simultaneously.

The sampling frequency up to 10kHz is available.

● **Moving image data acquisition with Web camera**

Camera : DirectX compatible Web camera (recognized by the OS as an image device)

Number of cameras : 1

Resolution : Max. 640 x 480

Frame rate : Max. 30 fps

Saving file format : AVI format

* Resolution and frame rate depend on the camera.

The Web camera is optional.

Measuring conditions during recording :

Manual mode, manual mode (set record data)

● **Arithmetic Processing**

High-pass/ low-pass filter :

Cutoff frequency : One-half of the sampling frequency or less
Order : 2nd to 4th

Number of differentiations/integrations : 1, 2

Number of moving average data items : 2 to 5000

Arithmetic operation :

Max. 32 arithmetic expressions can be set (up to 200 characters)

6-component force matrix input

Operators : +, -, *, /, power, parentheses, sine, cosine, tangent, arcsine, arc cosine, arc tangent, common logarithm, natural logarithm, exponent

Triaxial rosette analysis (maximum principal strain, minimum principal strain, maximum shearing strain, maximum principal stress, minimum principal stress, maximum shearing stress, direction of principal strain)

Measuring conditions during arithmetic operation :

Measurement mode : Manual mode, manual mode (set record data), interval mode

● **FFT Analysis**

Analysis type : Linear spectrum, power spectrum, cross spectrum, auto-correlation, cross-correlation

Window function : OFF, Hamming, Hanning, Fejer, Blackman, Gaussian

Number of analysis data : 256, 512, 1024, 2048, 4096, 8192

Number of analysis windows : Max. 8

Saving file format : Kyowa standard file format (KS2)
KS2 file version: 01.04

■ **Monitor**

Y-Time graph : X-axis indicates the time, and Y-axis the physical amount of measurement for a maximum of 16 channels. 1 to 4 graphs can be displayed on a window.

Y-Time (DIV) graph : X-axis indicates the time, and Y-axis the physical amount of measurement for a maximum of 16 channels.

Y-Time (all channel) graph : Unlike the time-series graph above, the zero point of the channel can be placed at any place on the Y-axis scales. X-axis indicates the time, and Y-axis the physical amount of measurement for all channels. Unlike the time-series graphs above, the line color is the same for all channels.

X-Y graph : Any combination of 8 channels can be plotted on X- and Y-axis.

Bar graph : Up to 32 channels are contained in a graph. 1 to 4 graphs can be indicated on a window. Peak hold ON/OFF

Digital graph : X-axis indicates the time, and Y-axis bit data of a digital channel (upto 16 bits). 1 to 4 graphs can be displayed on a window.

Circle meter : Any one channel is displayed in a circle meter.

Bar meter : Any one channel is displayed in a horizontal or vertical bar meter.

Numeric display : Any one channel, 16 channels or all channels are listed.

Display color : Any color can be selected.

Title, labels : Any title or X- and Y-axis labels can be specified.

No. of windows : 8 numeric windows, 8 graph windows

Information : Various information can be appended to the title or status bar.

■ **Data Reproduction**

● **Recorded Data Display**

Graph display : 4 patterns of display condition can be set for a graph.

Y-Time graph : X-axis indicates the time, and Y-axis the physical amount of measurement for up to 16 channels. 1 to 4 graphs can be displayed on a window.

X-Y graph : Any 4 graphs can be plotted on X- and Y-axis.

All data display : All data can be displayed on a window at an interval of 4 channels.

Numeric data display : A list of recorded data is displayed. Data for 16 channels, with a maximum of 10000 data items for each channel, is displayed in a window.

Cursor : Numeric display of the engineering value of cursor position. Enlarged display of two cursors. Scroll.

Header information : Display and editing of titles and channel conditions (calibration, coefficient, offset, engineering unit, etc.)

KS2 file : MAX/MIN data display, voice data list and reproduction

Moving image reproduction :

Reproducible file format AVI

Operations : Play, stop, pause, frame-by-frame forward/backward, zoom, changing reproduction speed

Synchronous display : Playback of moving image data coupled with the cursor for graph waveform.

● **Data Analysis**

Statistic processing : A list of maxima, minima, averages and standard deviations in a desired section of the data file. The results are saved in CSV files.

Arithmetic operation :

Inter-channel operation for up to 2 files. The result is saved in a new file (up to 320 expressions can be specified).

Expression : Up to 60 characters

Operator : +, -, *, /

Sine, cosine, tangent, arc sine, arc cosine, arc tangent, common, logarithm, natural logarithm, exponent Triaxial rosette analysis (max. principal strain, min. principal strain, max. shearing strain, max. principal stress, min. principal stress, max. shearing stress, direction of principal strain)

FFT analysis :

Analysis type : Linear spectrum, power spectrum, cross spectrum, auto-correlation, cross-correlation, coherence, transfer function



Window function : OFF, Hamming, Hanning, Fejer, Blackman, Gaussian

No. of analysis data : 256, 512, 1024, 2048, 4096, 8192, 16384, 32768

Filter : 12 steps of 1, 2, 5, 10, 20, 50, 100, 200, 500, 1000, 2000Hz and FLAT

No. of integrations : 0 to 2

Average No. of times : 1 or more (0: whole waveform)

No. of shifts : 2 or more

Analysis type	Analysis graph 1	Analysis graph 2
Linear spectrum	Amplitude (linear)/amplitude (log)	Phase
Power spectrum	Amplitude (linear)/amplitude (log)	-
Crossspectrum	Amplitude (linear)/amplitude (log)	Phase
Auto-correlation	Correlation	-
Cross-correlation	Correlation	-
Coherence	Coherence	-
Transfer function	Transfer function	Phase

Analysis results are saved in CSV files.

Histogram analysis : No. of channels : All channels

Algorithms :

Peak/valley, maxima/minima, 1D rainflow, Amplitude, 1D time at level, 1-dim rainflow + peak/valley, 1D rainflow + maxima/minima, 2D rainflow

No. of slices :

1D algorithm : Even numbers from 10 (5) to 256 (128)

2D algorithm : Even numbers from 10 to 50

Slice width, hysteresis, offset (for maxima/minima), etc. can be specified.

Results : Tabular or drawing display (3D display for 2D rainflow)

Filtering : Digital filter: IIR filter for 4th order Butterworth characteristics (no delay and -6dB at the cutoff frequency)

High-/low-pass filter : FLAT to 500kHz (effective up to one-half of the sampling frequency) Mirroring

Differentiation/ integration :

No. of times of differentiation/integration(1, 2) and an engineering unit can be specified after processing.

Average correction is possible for integration.

●Utility

Multiple file conversion : Conversion to CSV, XLS or RPCIII format

File coupling : Multiple files (master and slave) acquired in synchronized operation can be coupled into one file.

Reverse file conversion : Data files converted by this software into CSV format can be converted into KS2 format.

Multiple file analysis : Analysis of multiple files under same conditions. Histogram analysis, filtering and differentiation/integration are available.

Other : Overwriting of multiple files

Up to 16 data files can be displayed and overwritten as Y-Time data.

■Configuration

Synchronous operation setting : Standalone, synchronous master, synchronous slave

Recording setting : Storage of data files

Automatic file conversion : Automatic file conversion after measurement (CSV, XLS or RPCIII format)

Engineering unit specification : Up to three user specified engineering units can be registered.

Other : Oscillator switching (internal, external), operation beep, balance standard, front speaker ON/OFF

■Print

Printable item : Setting conditions, numeric data, graphs

Remark : Optional printer driver is required.

■ Dimensions

