

UNIVERSAL RECORDER
EDX-200A-1

***Portable
& High Performance!***

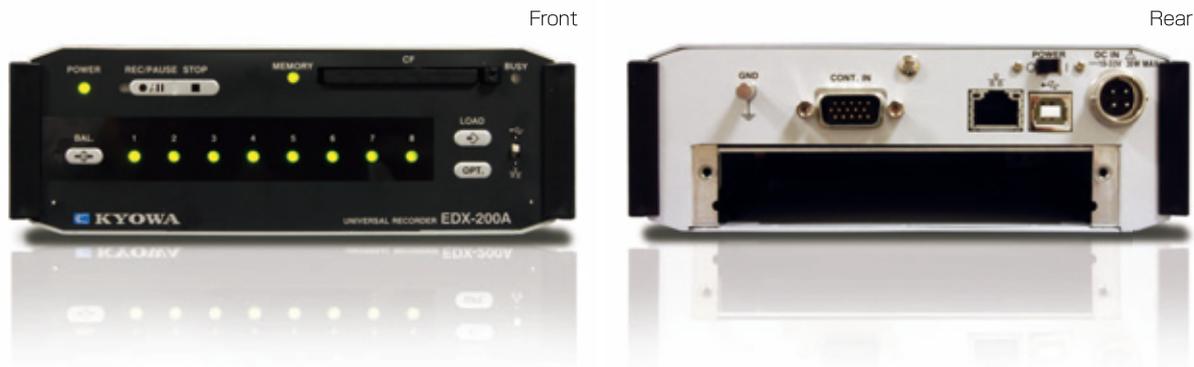


Sophisticated Portable EDX

The EDX-200A-1 is a new portable universal recorder with real-time processing functions such as dual sampling and digital filtering.

universal recorder **EDX-200A-1**

*CE Marking is to be acquired



1

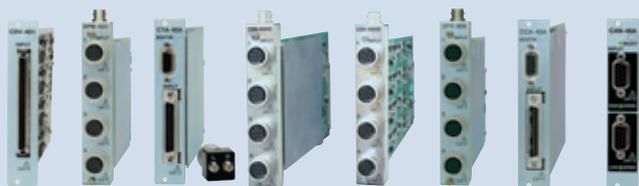
Multi-channel high-speed sampling >>>

High-speed simultaneous sampling at 20 kHz for all channels (8 channels)

Three channels can be measured simultaneously at a maximum of 100 kHz.

2

A wide array of input conditioner cards >>>



The cards used on the EDX-100A, EDX-2000A/B, and EDX-3000A can be directly used on this system.

CVM-40A **NEW**

High-resolution conditioner strain compatible with multiple inputs for strain/voltage/piezoelectric acceleration

A selectable input method for each channel ensures flexible measurement.

* For more details, please see pages 4, 7, 8.

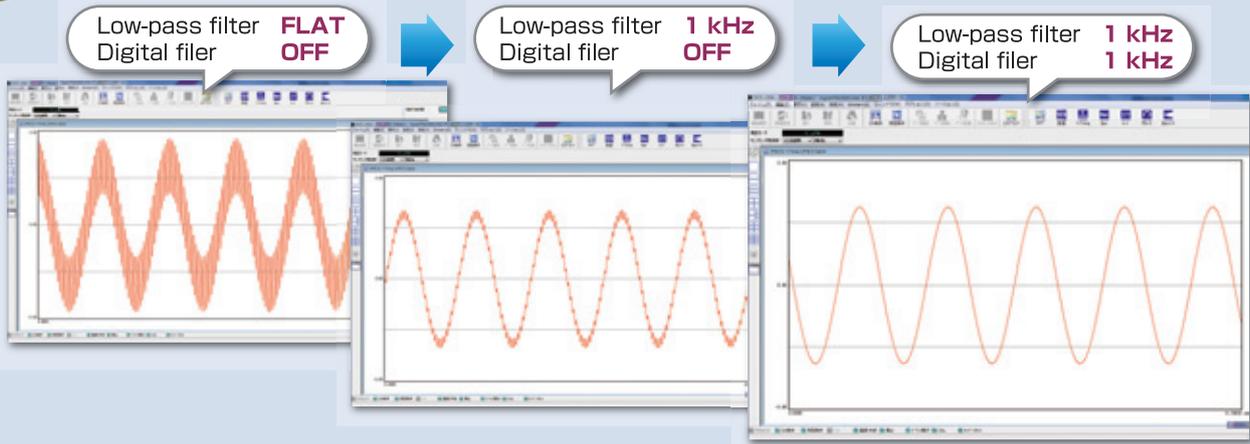
Advantage

In addition to versatility, the CVM-40A allows for multiple inputs.

3

A real-time digital filter is mounted >>>

(DCS-100A monitor screen)



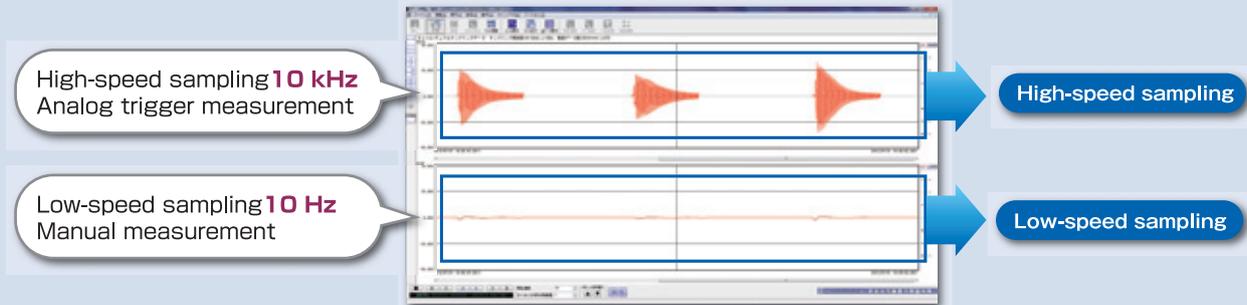
Advantage

The 8th-order digital filter enables the recording of fine waveforms.

4

High-speed/low-speed dual sampling >>>

(DAS-200A reproduction screen)

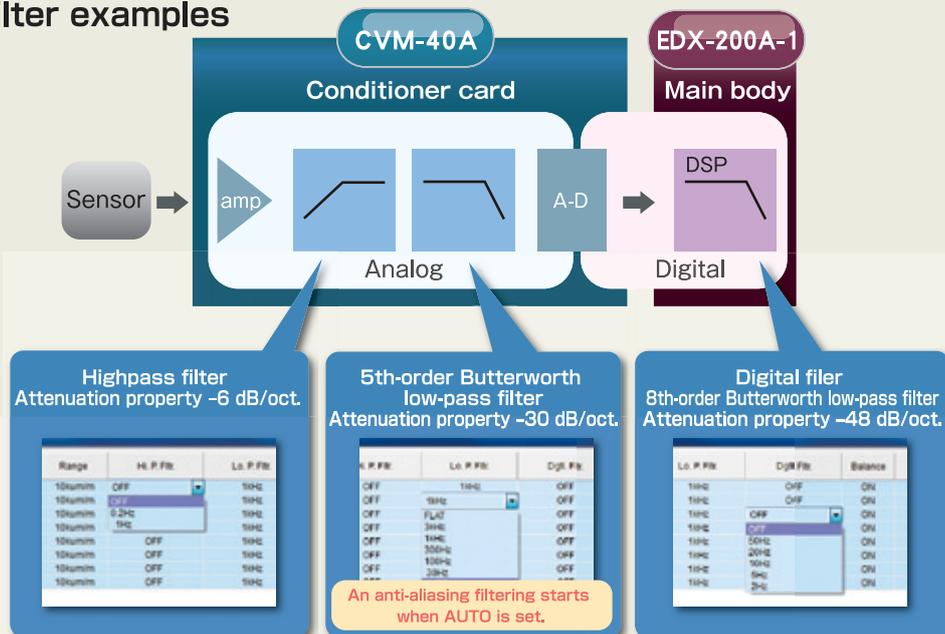


High-speed and low-speed sampling frequencies are available. During ordinary operation, recording is performed using low-speed sampling. Trigger measurement using high-speed sampling can be made when a sudden change occurs.

Advantage

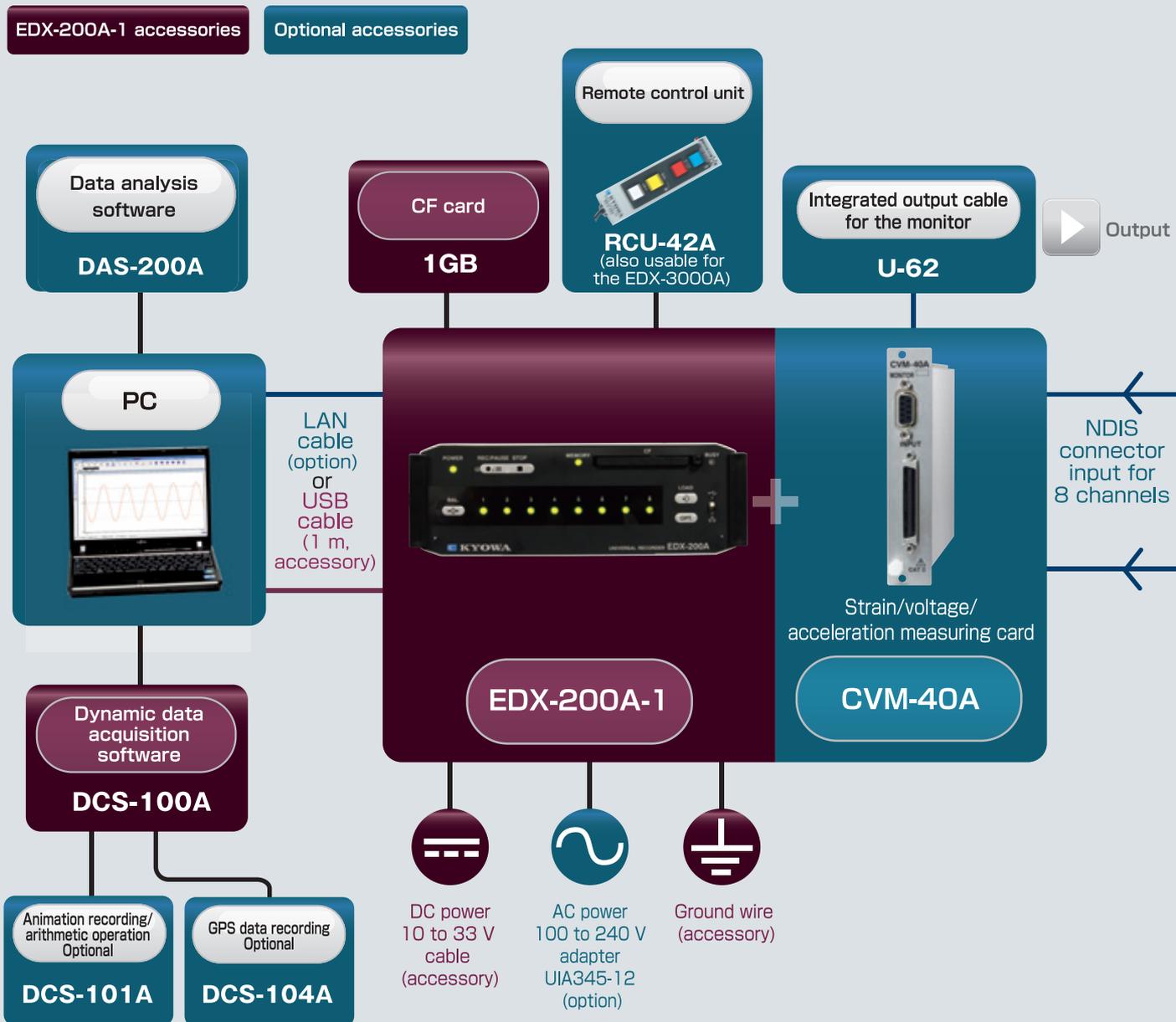
Dual sampling enables measurement with a minimal data volume.

Simplified filter examples



Digital filters can be used in combination with analog filters (highpass/low-pass) mounted on conditioner cards (Digital filters do not apply to CAN input data).

Simplified configuration of the EDX-200A-1 CVM-40A conditioner card



List of EDX-200A-1 Accessories and Optional accessories

EDX-200A-1 accessories	
Item	Model
Dynamic data acquisition software	DCS-100A(CD)
USB cable	N-38(1m)
DC power cable	P-76(2m)
Ground wire	P-72(5m)
CF card (1 GB)	Implemented in the slot
Operation manual(Japanese/English,on the CD)	
EDX accessory bag	

Optional accessories	
Item	Model
AC adapter for the EDX-200A-1	UIA345-12
Multiple-input conditioner card	CVM-40A
CVM input cable (Integrated connector NDIS female connector (8-ch))	U-121(0.5m) U-122(1.0m) U-123(1.5m)
Voltage/piezoelectric-type input connector (1-ch)	FV-1A
Small bridge box for a 1-gage (8-ch)	DBS-120A/350A-8
Small bridge box (8-ch)	DB-120V/350V-8
Voltage input box	VI-8A
CVM input cable (both-end integrated connector)	N-121(1.5m)
Monitor output cable (integrated connector BNC connector)	U-62(1.1m)
Remote control unit	RCU-42A(1.5m)

Options for input

CVM input cable



**U-121, U-122,
U-123**

U-121 (0.5m)
U-122 (1.0m)
U-123 (1.5m)

CVM integrated input cable



N-121

CVM integrated input cable
(8ch)

Small bridge box for 1-gage



**DBS-120A-8,
DBS-350A-8**

Customized bridge box for a 1-gage (inputs can be made for 8 channels simultaneously)

Small bridge box



**DB-120V-8,
DB-350V-8**

Bridge box 1, 2, and 4 gages (inputs can be made for 8 channels simultaneously)

Voltage input box



VI-8A

BNC connectors are integrated in this small input relay box for 8 channels.

Strain gage transducer

(e.g., load cell, pressure transducer, acceleration transducer, and torque transducer)



Voltage/ piezoelectric-type input (BNC connector)



FV-1A

By installing a FV-1A-voltage/piezoelectric-type input (BNC connector), you can connect a voltage input or a piezoelectric accelerometer



Strain gage



Voltage



Piezoelectric accelerometer



ASPA/ASPB/ASPC
(with built-in amplifier)

Using piezoelectric elements, this acceleration sensor can be inputs on the EDX series and conditioner cards CVM-40A/CCA-40A, and is suitable for the measurement of very fast phenomena.



Charge converter



CA10M-BPM
(Fuji Ceramics Corp made)

charge-type accelerometer



EDX-200A-1 Main Body Specifications

Model name ● Accessory provided — Accessory not provided

Model name	Maximum number of input channels	Number of conditioner slots	Number of optional slots	DCS-100A control software	DCS-101A animation recording/arithmetic operation software
EDX-200A-1	8	1	/	●	—
EDX-200A-1-1				●	●

[Note] Maximum number of input channels: 8, with an input conditioner card mounted

Analog input conditioner	Strain/voltage/acceleration measuring card : CVM-40A Strain/voltage measuring card : CDV-40B, CDV-40B-F Dynamic strain measuring card : DPM-42B/A, 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, CCA-40A-F Strain/voltage measurement insulation card : CDV-44AS DC constant-current amplifier card (120 Ω) : CDA-44AS DC constant-current amplifier card (350 Ω) : CDA-45AS
CAN data input conditioner	CAN card (1 port, up to 128 channels) : CAN-40A CAN card (2 ports, up to 256 channels) : CAN-41A Note: Either a CAN-40A or CAN-41A card can be mounted.
Voice memo input	The DAS-200A data reproduction software (optional item) is used to reproduce voice memos recorded using the 1channel inputted voice memos can be recorded together with measurement data by RCU-42A remote control unit (optional item).
Sampling	Sampling method All channels, synchronized Sampling mode Normal: All channels recorded at the same sampling frequency Dual: Either high-speed or low-speed sampling frequency is set for each channel for recording. Sampling frequency Normal sampling mode 1/2/5 system 1 Hz to 100 kHz 1 Hz to 2 kHz : During CAN data measurement 2 ⁿ system 2 Hz to 65,536 Hz 2 Hz to 2,048 Hz : During CAN data measurement Dual sampling mode High-speed sampling (Sf) 1/2/5 system: 1 Hz to 100 kHz 2 ⁿ system: 2 Hz to 65,536 Hz Low-speed sampling (Ss) 1/2/5 system: 1/2/5 system frequency division of high-speed sampling at $Ss \leq Sf/4$ 2 ⁿ system : 2 ⁿ system frequency division of high-speed sampling at $Ss \leq Sf/4$ Number of data-collectable channels Normal sampling mode 320,000/integral part of the "preset sampling frequency" (however, up to 8 channels) Dual sampling mode 320,000/integral part of the "preset sampling frequency" (however, up to 16 channels) CAN data collection Number of CAN data channels
Digital filter	8th-order Butterworth low-pass filter(IIIR) Amplitude ratio at cutoff point : -3 dB Attenuation property : -48 dB/oct. Note: Usable in combination with a low-pass filter mounted with a conditioner card A digital filter not applicable to CAN data
Data storage	CF card capacity: 128 MB to 16 GB (recommended) Maximum data file size (maximum recordable size of a data file) One repeated measurement: 4 GB/data file Two or more repeated measurements: 1 GB/data file (1 GB = 1,000,000,000 bytes)
Display unit	Channel status display LED : 8 units LED for main body status display : 4 units
Operation switch	REC/PAUSE : Start/pause of recording STOP: Discontinuance of recording BAL.: Execution of balancing (balance adjustment) LOAD: Reading and setting of conditions from the CF card OPT.: Execution of arbitrary functions set POWER: Power switch USB /LAN: Switching of communication interfaces
External control connector	CONT.IN (remote control)
Communication interface	USB (USB 2.0 High Speed) 1 port Connector shape : Series-B receptacle LAN (10/100BASE-T) 1 port LAN IN : For PC communication Connector shape: RJ45 modular jack

Condition setting	Online setting: On a PC using a LAN or USB interface Offline setting: Loading the measurement conditions inside the CF card into this system (Use the DCS-100A for the measurement conditions.)								
Storage of conditions	Conditioner configuration and measurement conditions are saved in nonvolatile memory on the EDX. As soon as power is turned on, data can be collected under the preceding measurement conditions.								
Measurement mode	Manual measurement The user manually starts and stops data recording or stops recording when a specified amount of data has been recorded. Voice memos can be recorded during manual operation. Trigger measurement Recording is started automatically under preset trigger conditions. * CAN data cannot be used for the trigger. Interval measurement Recording is started automatically under preset interval conditions. Combination of measurement modes in dual sampling mode <table border="1"> <thead> <tr> <th>High-speed sampling channel</th> <th>Low-speed sampling channel</th> </tr> </thead> <tbody> <tr> <td>Manual setting</td> <td>Manual setting</td> </tr> <tr> <td>Trigger setting</td> <td>Manual setting</td> </tr> <tr> <td>Interval setting</td> <td>Interval setting</td> </tr> </tbody> </table>	High-speed sampling channel	Low-speed sampling channel	Manual setting	Manual setting	Trigger setting	Manual setting	Interval setting	Interval setting
High-speed sampling channel	Low-speed sampling channel								
Manual setting	Manual setting								
Trigger setting	Manual setting								
Interval setting	Interval setting								
Recording start /stop	Executable on a PC, by using the operation switch (on the panel) or by customized remote control.								
Balance adjustment	Balance adjustment for the strain input channel is executed using a PC, by using the operation switch (on the panel) or by customized remote control.								
Recorded data format	Kyowa standard format KS2 Analysis can be made using the DAS-200A data analysis software.(option)								
Data collection	Online collection using a PC, or offline collection by inserting a CF card into the PC								
TEDS functions	Only during online control using a PC Compatible conditioner card : CDV-40B(-F), CDV-44AS, DPM-42B/A(-F), DPM-42B-I(-F), CCA-40A (-F), CDA-44AS, CDA-45AS, CVM-40A								
Power	DC 10-33 V connector type: RM12BRD-4PH (Hirose Electric)								
Consumption current	About 1.0 A (DC12 V, CDV-40B: 1 units implemented)								
Operating temperature range	0~50°C								
Operating humidity range	20~90%RH (No dew condensation)								
Storage temperature range	-20~60°C								
Vibration resistance	49.0m/s ² (5G), 5~55Hz, 1 cycle, 1 min, each axis 15 cycles (during non-operation) 29.4m/s ² (3G), 5~55Hz 1 cycle, 1 min, each axis 15 cycles (during operation)								
Impact resistance	294.2m/s ² (30G) / 11msec								
External dimensions	148 (W) x53 (H) x257 (D) mm, excluding protrusions								
Weight	Main body: approx.0.9 kg (approx.1.1 kg with 1 CDV-40B cards mounted)								

DCS-100A Software Specifications (Standard Accessory)

- Varied monitor displays of graph and numerical values, and flexible layouts of graph/numeric windows
- Flexible control of a various recorders made by Kyowa Electric Instruments
- Direct storage of recorded data on the PC's hard disk
- Easy toolbar startup for data processing and analysis software (sold separately)

Interface	LAN, USB
Recording	Measurement data is stored in the CF card on the EDX-200A or on the PC's hard disk (in KS2 files).
Compatible conditioner card	CDV-40B/A (-F), DPM-42B (-F,-I,-I-F), CCA-40A (-F), CVM-40A, CDA-44AS/45AS, CTA-40A, CFV-40A, CAN-40A, CAN-41A, CDV-44AS
Channel conditions	Measurement ON/OFF, mode, range, high-pass filter, low-pass filter, balance ON/OFF, CAL range, CAL ON/OFF, calibration factor, offset, unit, channel name, measurement range, decimal point, number of places after the decimal point, rated capacity, rated output, digital filter, sampling frequency (selection of high-speed, low-speed, or high-speed + low-speed for dual sampling) (display items are selectable)
Compatible with TEDS	Reading of TEDS information and automatic setting for channel conditions
Dual sampling	Display of high-/low-speed sampling data on numeric/graph windows Storage of high-/low-speed sampling data in different files
Setting/reading of parameters	Reading and setting of internal parameters in the EDX-200A
Data file collection	Collection of KS2 files inside the CF card on the EDX-200A
Data file deletion	Deletion of KS2 files from the CF card on the EDX-200A
Environmental setting	
Hardware configuration setting	Setting of the number of units connected and device names Reading of hardware configuration from the EDX-200A
Communication check	Reading of the EDX-200A version

Automatic conversion of data files	Automatic file conversion at the end of measurement (CSV format, XLS format, XLSX format, RPC III format)
Arbitrary unit setting	Arbitrary setting enabled for up to three types of units
Other	Oscillator switching (internal/external), operation beeps, balance standard value, AD data format (16 bits, 24 bits)
Measurement conditions for storing measurement data in the CF card on the EDX-200A	
Sampling frequency	1 to 100 kHz (1/2/5system, 2 ⁿ system, external clock) * Some limitations due to measurement channels Compatible with dual sampling (high/low-speed sampling setting possible)
Data file size	Maximum 4 GB
Measurement mode	Manual, Manual (number of recorded data specified), Interval, Analog trigger, External trigger, Compound trigger
Manual measurement	Recording performed from REC to STOP or from REC to the specified amount of recorded data
Interval measurement	Automatic recording by setting the recording start time and recording intervals
Trigger measurement	Recording started/ended in accordance with preset trigger conditions (absolute trigger with a fixed trigger threshold)
• Common trigger conditions	Setting possible
(1) End trigger	For start/end, a maximum of 262, 144 data/1 channel
(2) Amount of delay	The amount of delay differs depending on the measurement channel.
• Analog trigger conditions	Any one channel
(1) Trigger channel	Setting by physical quantity
(2) Trigger level	Rising edge/falling edge
(3) Trigger slope	
• External trigger measurement	Rising edge/falling edge
(1) Trigger slope	
• Compound trigger conditions	Selection from analog channels (four arbitrary master EDX channels), an external trigger, and a manual trigger; the trigger source can be identified logically by AND/OR.
(1) Trigger source	
(2) Trigger level	Set by physical quantity
(3) Trigger slope	Rising edge/falling edge
Storing measurement data in the PC hard disk	
Sampling frequency	1 to 100 kHz (1/2/5 system, 2 ⁿ system, external clock)
Data file size	To hard disk capacity
Measurement mode	Manual, manual (the number of recorded data specified), interval
Manual measurement	Recording performed from REC to STOP or from REC to the specified amount of recorded data
Interval measurement	Automatic recording by setting the recording start time and recording intervals
Analog trigger measurement	Recording is started/ended under preset trigger conditions. (absolute trigger with a fixed trigger threshold)
(1) End trigger	Setting possible
(2) Amount of delay	For start/end, a maximum of 264, 144 data/1 channel The amount of delay varies depending on the number of measurement channels.
(3) Trigger channel	Any one channel
(4) Trigger level	Setting by physical quantity
(5) Trigger slope	Rising edge/falling edge
Monitor screen	
Time series graph	The X-axis is the time axis, and the Y-axis displays physical quantity measurements for up to 8 channels. Up to four graphs displayed on a screen
Time series (DIV) graph	The X-axis is the time axis, and the Y-axis displays physical quantity measurements for up to 16 channels. Unlike the chronological graph described above, it is possible to move the zero-point position on the display channel to any position on the Y-axis.
X-Y graph	The X/Y axes can display a graph by combining any 8 channels.
Bar graph	Display of up to 8 channels on a graph; up to four graphs displayed on a screen Peak hold ON/OFF (numeric display possible)
Bar meter	Any channel can be displayed horizontally/vertically.
Circle meter	Display of any channel with a circle meter
Numeric display	Display of any * 1 channel, 8 channels, and all channels (* display of maximum/minimum values for each channel)
Display color	Arbitrarily changeable using a graph unit
Title and label	Setting possible for any title and X/Y axis label
Number of items on simultaneous display	Numeric value: 32, graph: 32 Display of up to 64 items composed of numeric values and graphs (including graphs and numeric values displayed in data reproduction) * The maximum number of items may not be displayed depending on the CPU rate or installed memory capacity of the PC.
Measurement operation	Data is stored in the EDX main body.
Storage of recorded data	Depending on the sampling frequency and the number of measurement channels, you can save directly on the PC hard disk, without storing data in medium in the EDX main body.
Automatic collection of data files	Automatic collection of recorded files in the PC hard disk immediately after the completion of recording

Automatic conversion into a CSV file	Automatic conversion into a CSV file immediately after the completion of recording
Data file format Storage form	To store recorded data on a PC, the Kyowa standard file format ("KS2 format") is used.
Readable format	File format stored in the medium on a control device and the KS2 format stored by this software
Data reproduction Time series graph	The X-axis is the time axis, and the Y-axis displays the measured physical quantities for up to 8 channels. Display of up to 4 graphs on a screen
Time series (DIV) graph	The X-axis is the time axis, and the Y-axis displays the measured physical quantities for up to 8 channels. Unlike the chronological graph described above, it is possible to move the zero-point position on the display channel to any position of the parting line on the Y-axis.
X-Y graph	Display on the X/Y axes of graphs for any combination of 8 channels
Numeric display	List display
Screen display color	Changeable by graph unit
Title and label	Setting possible for any title and X/Y axis label
Cursor display	Display of an engineering value of the cursor position
Number of items on simultaneous display	32 numerical values and 32 graphs Display of up to 64 numeric values and graphs combined (including graphs and numeric values displayed on the monitor screen) * The maximum number of items displayable may vary depending on the PC's CPU rate and the installed memory capacity.
Displayable data File size	Data files displayable at time in graph/numeric display If the file size exceeds 10 MB, any part of a 10MB file may be displayed by setting a display range.
File conversion	Arbitrary range, file cutouts in arbitrary channels, CSV file conversion, Excel format conversion, RPC III format conversion
Operating environment OS	Windows XP, Windows-Vista, Windows 7 Japanese/English, 32/64-bit compatible (only 32-bit compatible for Windows XP)
CPU	Pentium4 2 GHz-equivalent or more (Pentium III 1 GHz-equivalent or more for Windows XP)
Memory	2 GB or more (1 GB or more for Windows XP)
Display	Resolution: 1024 × 768 dots or more
HDD	20 MB + measurement data storage at installation
Interface	100 BASE-TX, USB (depending on devices under control) * WOW64 for a 64-bit OS Operation in an environment (Windows 32-bit On Windows 64-bit)

Strain/voltage/acceleration measuring card

CVM-40A			
Items	Strain measurement	Voltage measurement	Acceleration measurement (piezoelectric-type)
Name	Strain/Voltage/Acceleration card		
Model	CVM-40A		
Number of input channels	8		
Measured parameter	Strain gage Strain gage transducer	Voltage	Piezoelectric accelerometer (with built-in amplifier)
Input mode	Balance differential input	Balance differential input ① ②	Unbalanced input ③
Input impedance	—	(1 MΩ + 1 MΩ) ±10% ④	—
Bridge power (BV) Sensor power	Constant voltage output BV2V: DC 2 V ±0.5% BV5V: DC 5 V ± 0.5%	Constant voltage output DC 2 V, DC 5 V or OFF 100 mW/CH or less	Constant current output: About 4mA Applied voltage: About DC 23 V Load: 1 kΩ or less
Adaptive gage factor	2.00 fixed	—	—
Adaptive bridge resistance	BV2V: 120 to 1, 000 Ω BV5V: 350 to 1, 000 Ω	—	—
Balance operation setting (zero suppression)	[Auto-balance enabled] The unbalanced portion of the bridge is cancelled on the analog circuit to make the measurement value zero. [Auto-balance disabled] The unbalanced portion of the bridge is not cancelled (initial unbalanced values in the bridge circuit can be checked).	[Zero suppression enabled] Input voltages are cancelled on the analog circuit to make the measurement value zero. [Zero suppression disabled] Input voltages are not cancelled on the analog circuit (input voltages are directly displayed).	—

Balance adjustment range	BV2V: Resistance $\pm 10\%$ ($\pm 50,000 \mu\text{m/m}$) BV5V: Resistance $\pm 4\%$ ($\pm 20,000 \mu\text{m/m}$)	$\pm 5\text{V}$	—
Measurement range	BV2V: 5k,10k,50k,100k, 500k $\mu\text{m/m}$ BV5V: 5k,10k,50k,100k, 200k $\mu\text{m/m}$	1, 5, 10, 50V	100, 500, 1000, 5000mV
Range accuracy	$\pm 0.2\%$ FS		$\pm 1.0\%$ FS
Calibration value (CAL) SHUNT CAL	$\pm 100\%$, $\pm 50\%$ of each range and SHUNT ^⑤	$\pm 100\%$, $\pm 50\%$ of each range	
Nonlinearity	$\pm 0.1\%$ FS		$\pm 0.2\%$ FS
Response frequency	DC connected: DC up to 5 kHz, deviation +1 dB, -3 dB AC connected: 0.2, 1 Hz to 5 kHz (Refer to the clause on Highpass filter)	0.5Hz to 5kHz Deviation+1dB,-3dB	
Low-pass filter	transmission property: 5th-order Butterworth Cutoff frequency: 30, 100, 300, 1k, 3 kHz, FLAT and AUTHORITIES ^⑥ Cutoff accuracy: -3 ± 1 dB, attenuation property: -30 ± 3 dB/oct.		
Highpass filter	Cutoff frequency: 0.2 Hz, 1 Hz Attenuation property: -6 dB/oct.	—	
Resolution	24 bits ^⑦		
Distortion factor	—		1% or less
Monitor output	Accuracy: $\pm 5 \text{ V} \pm 0.5\%$ (at \pm FS) Nonlinearity: $\pm 0.5\%$ FS		
Dimensions	22 (W) \times 119 (H) \times 213 (D) mm (excluding protrusions)		
Weight, approx.	400g		
Added function	Reading of information in TEDS internal sensor		

- ① Unbalanced input when using the FV-1A input adapter
 ② In-phase input voltage range of ± 20 VDC, absolute input voltage range of ± 50 V
 ③ FV-1A input adapter is used
 ④ $1\text{M}\Omega \pm 10\%$ when using the FV-1A input adapter (non-balance input)
 ⑤ SHUNT CAL outputs a strain of about 257×10^{-6} , when a 350Ω load is connected.
 ⑥ When set to AUTO, cutoff frequencies are set to about 1/4 of the setting sampling frequency.
 ⑦ When implemented with the EDX-200A and the EDX-3000A (resolution of 16 bits when the EDX-100A is implemented)
 Note: As for converters with remote sensing, the N-81 to N-85 are used together.

Strain/voltage measurement card

CDV-40B, CDV-40B-F (with an anti-aliasing filter)		
Item	Strain measurement	Voltage measurement
Number of input channels	8 (integrated connector)	
Input mode	Balance differential input	Unbalanced input
Input resistance	About (10 M Ω + 10 M Ω)	About 1 M Ω
Coupling	DC/AC (DC cut)	
Applicable gage factor	2.00 (fixed)	—
Bridge excitation	DC 2.00 $\pm 2\%$ (120 to 1 k Ω)	—
Balance adjustment range	Resistance $\pm 2.4\%$ ($\pm 12,000 \mu\text{m/m}$)	—
Measurement range	500, 1k, 2k, 5k, 10k, 20k, 50k $\times 10^{-6}$ strains, OFF	0.1, 0.2, 0.5, 1, 2.5, 10V, OFF
Range accuracy	For each range: $\pm 0.2\%$ FS	
Calibration value (CAL)	For each range: $\pm 100\%$, $\pm 50\%$, accuracy: $\pm 0.3\%$	
Nonlinearity	$\pm 0.1\%$ FS	
Response frequency range	DC connected: DC to 50 kHz Deviation + 1 dB, -3 dB DC cut (AC connected): 0.2, 1 Hz to 50 kHz (Refer to the description of the Highpass filter)	
Low-pass filter	Transmission property : 2nd-order Butterworth Cutoff frequency : Eight frequencies of 10, 30, 100, 300, 1k, 3k, 10 kHz and F (flat) Cutoff accuracy : -3 ± 1 dB Attenuation property : -12 ± 1 dB/oct.	
Anti-aliasing filter (CDV-40B-F only)	8th-order Butterworth type Cutoff frequency : Automatically set to the sampling frequency $\times 0.25$ Breaking property : -48 ± 5 dB (at the sampling frequency $\times 0.5$) Note: DCS-100A low-pass filter set to "AUTO"	
Highpass filter (DC cut)	Cutoff frequency: 0.2Hz, 1Hz Attenuation property: -6 dB/oct.	
AD converter resolution	16 bits	
Added functions	Reading of information in the TEDS internal sensor	

Optional accessories

Voltage conversion adapter (FV-1A), 8 channel input cable (U-38 to 48)
 Note: For converters with remote sensing, the N-81 to N-85 are used together.

Dynamic strain measurement card

DPM-42B, DPM-42B-F ^(*1) DPM-42B-I ^(*2) , DPM-42B-I-F ^(*1,*2)	
These cards are for strain gage and strain gage transducers, utilizing carrier waves for bridge power, and are suitable for low-level strain measurement. These cards provide insulation between the input and output, as well as between channels. *1 : with an anti-aliasing filter *2 : withstand the inverter noise	
Measuring instrument	Strain gage, Strain gage transducer
Number of input channels	4
Response frequency range	DC up to 5 kHz (deviation: $\pm 10\%$)
Carrier wave frequency	12 kHz
Adaptive bridge resistance	120 to 1,000 Ω
Gage factor	2.00 (fixed)
Bridge excitation	2 Vrms, 0.5 Vrms switching, 12 kHz sine wave
Balance adjustment range	Resistance: $\pm 2.4\%$ ($\pm 12,000 \mu\text{m/m}$) Capacity: 2,000 pF
Method of balance adjustment	Resistance: Electronic auto balance (stored in nonvolatile memory) Capacity: CST method (automatic tracking)
Measurement range	Bridge power of 2 Vrms: Eight levels of 200, 500, 1,000, 2,000, 5,000, 10,000, 20,000 $\mu\text{m/m}$, and OFF Bridge power of 0.5 Vrms: Seven strains of 1,000, 2,000, 5,000, 10,000, 20,000, 50,000 $\mu\text{m/m}$, and OFF
Calibration value (CAL)	Outputs $\pm 100\%$, $\pm 50\%$ of each range
Nonlinearity	$\pm 0.2\%$ FS
Low-pass filter	Transmission property: 2nd-order Butterworth type Cutoff frequency: Six frequencies: 10, 30, 100, 300, 1 kHz and FLAT Cutoff accuracy: -3 ± 1 dB Attenuation property: -12 ± 1 dB/oct.
Anti-aliasing filter (DPM-42B-F and DPM-42B-I-F)	8th-order Butterworth type Cutoff frequency: Automatically set to the sampling frequency $\times 0.25$ Breaking property: -48 ± 5 dB (at the sampling frequency $\times 0.5$) Note: With a low-pass filter on the DCS-100A set to "AUTO"
Resolution	16 bits
Added functions	Input check function: Inputs checked by inserting a resistor in one side of the bridge Information read from the TEDS internal sensor
Monitor output	Accuracy: $\pm 5 \text{ V} \pm 0.5\%$ (when \pm FS), Nonlinearity: Within 0.5% FS
Withstand voltage	Between input-output: AC 250 V for 1 minute

Optional accessories Cable for monitor output (U-64)

Note: For converters with remote sensing, the N-81 to N-85 are used together.

Strain/voltage measurement insulation card

CDV-44AS	
This card performs well against common mode noise even on sites with powered devices.	
Measuring instrument	Strain gage (4-gage method) Strain gage transducer, Voltage
Number of input channels	4
Input resistance	About 10 M Ω + 10 M Ω (strain mode) About 1 M Ω (voltage mode)
Mode of input	Balance differential input (strain mode) Non-balance input (voltage mode)
IMRR	120 dB (at 500 $\mu\text{m/m}$ range)
Gage factor	2.00 (fixed) (strain mode)
Response frequency range	DC connected: DC to 5 kHz, deviation between +1 dB and -3 dB DC cut (AC connected): 0.2 Hz (see "Highpass filter")
Bridge excitation	DC 2 V $\pm 2\%$ (strain mode)
Range accuracy	$\pm 0.3\%$ FS
Adaptive bridge resistance	120 to 1,000 Ω (strain mode)
Measurement range	500, 1k, 2k, 5k, 10k, 20k $\mu\text{m/m}$, and OFF (strain mode) 1, 2, 5, 10V, 20V, 50V, and OFF (voltage mode)
Balance adjustment range	$\pm 2.4\%$ ($\pm 12,000 \mu\text{m/m}$) (when measuring strain) $\pm 5 \text{ V}$ (when measuring voltage)
ZERO accuracy	$\pm 0.3\%$ FS (voltage OFF mode)
Nonlinearity	$\pm 0.1\%$ FS
Calibration value (CAL)	Output of $\pm 100\%$, $\pm 50\%$ of each range Accuracy: $\pm 0.3\%$ FS
Monitor output	Accuracy: $\pm 5 \text{ V} \pm 0.5\%$ ($\pm 5 \text{ V}$ for the full scale of each range)
Low-pass filter	Transmission property: 2nd-order Butterworth type Cutoff frequencies: 10, 30, 100, 300, 1k, F (flat) Cutoff accuracy: -3 ± 1 dB Attenuation property: -12 ± 1 dB/oct.

Highpass filter	Cutoff frequency : 0.2 Hz Attenuation property : -6 ±1dB/oct.
AD converter resolution	16 bits
Added functions	Information read from the TEDS internal sensor
Insulation	Between input and enclosure (output) Between channels: Withstand voltage of DC 500 V for 1 minute

Standard accessories	Voltage conversion adapter for insulation amplifier (FV-2A set of four)
Optional accessories	Cable for monitor output (U-64)

Note: For converters with remote sensing, the N-81 to N-85 are used together.

Constant direct current amplifier card

CDA-44AS,45AS

This card enables smooth cable extension.

Measuring instrument	Strain gage (4-gage method) Strain gage transducer, Voltage
Number of input channels	4
Input resistance	About 10 MΩ + 10 MΩ (strain mode) About 1 MΩ (voltage mode)
Mode of input	Balance differential input (strain mode) Non-balance input (voltage mode)
IMRR	120 dB (at 500 μm/m range)
Response frequency range	DC connected: DC to 200 Hz, deviation between +1 dB and -3 dB DC cut (AC connected): 0.2 Hz (see "Highpass filter")
Gage factor	2.00 (fixed) (strain mode)

Bridge excitation	CDA-44AS: About DC 16.7 mA (constant current) when connected to a gage resistance of 120 Ω * When resistance for sensitivity and temperature properties is inserted into the BV line of the converter, sensitivity/temperature property compensation is not performed. CDA-45AS: About DC 5.7 mA (constant current) when connected to a gage resistance of 350 Ω * When resistance for sensitivity and temperature properties is inserted into the BV line of the converter, sensitivity/temperature property compensation is not performed.
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Cable length Applicable bridge resistance	CDA-44AS: For applicable bridge resistance of 120 Ω, the cable length must be within 500m (at the cross section of 0.5 mm ²) CDA-45AS: For applicable bridge resistance of 350 Ω, the cable length must be within 1,000m (at the cross section of 0.5 mm ²)
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Range accuracy	±0.3% FS
Balance adjustment range	500, 1k, 2k, 5k, 10k, 20k μm/m, and OFF (strain mode) 1, 2, 5, 10V, 20V, 50V, and OFF (voltage mode)
Measurement range	±2.4% (±12,000 μm/m) (when measuring strain) ±5 V (when measuring voltage)
ZERO accuracy	±0.3% FS (voltage OFF mode)
Nonlinearity	±0.1% FS
Calibration value (CAL)	Output of ±100%, ±50% of each range Accuracy: ±0.3% FS
Monitor output	Accuracy: ±5 V ±0.5%

Low-pass filter	Transmission property : 2nd-order Butterworth type Cutoff frequency : 1, 3, 10, 30, 100, F (flat) Cutoff accuracy : -3 ±1 dB Attenuation property : -12 ±1 dB/oct.
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High-pass filter	Cutoff frequency : 0.2 Hz Attenuation property : -6 ±1 dB/oct.
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AD converter resolution	16 bits
Added functions	Information read from the TEDS internal sensor
Insulation	Between input and enclosure (output) Between channels: Withstand voltage of DC 500 V for 1 minute

Standard accessories	Voltage conversion adapter for insulation amplifier (FV-2A set of four)
Optional accessories	Cable for monitor output (U-64)

Note: For converters with remote sensing, the N-81 to N-85 are used together.

Thermocouple card

CTA-40A

This card is capable of measuring temperatures using two types of thermocouples, K (CA) and T (CC). This card provides insulation between inputs and outputs, as well as between channels.

Measuring instrument	Thermocouple
Number of input channels	8
Available thermocouples	K (CA), T (CC)
Thermocouple resistance value	200 Ω or less (when burnout is ON) 1,000 Ω or less (when burnout is OFF)

Measurement range	Six levels: K1230, K480, K240, T400, T210, and OFF	
	Measurement range	Measured ranges
	K1230	-200~1230
	K480	-200~ 480
	K240	-200~ 240
	T400	-200~ 400
T210	-200~ 210	

Total accuracy	Ambient temperature : 20 ±3°C ± (0.5% rdg + 1)°C At an ambient temperature of 0 to 40°C ± (0.5% rdg + 2)°C
Calibration value (CAL)	Output of ±100%, ±50% of each range and 0°C in absolute value

Response frequency range	DC up to 10 Hz
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Resolution	16 bits
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Burnout	Internal : ON/OFF is enabled during a burnout ["Burnout" displayed]. Note : When thermocouple resistance is high, high-accuracy measurement is enabled by setting the burnout function to OFF.
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Monitor output	Accuracy: 5 V ±0.5% (at +FS), nonlinearity: ±0.5% FS
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Insulation	Between input-output, and between channels: DC 500 V 50 MΩ or more
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Standard accessories	8 channel input cable (U-104), temperature-measuring adapter (8 CT-2A units)
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Optional accessories	Integrated output cable (U-62)
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F/V converter card

CFV-40A

This card measures inputted pulse frequencies, having a power supply to the sensor. The card provides insulation between the input and the output.

Measuring instrument	AC signal output sensor
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Number of input channels	4
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Input signal	AC (zero cross), TTL level (including an open collector signal)
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Input voltage range	±(0.5 V to 50 V) : Large hysteresis ±(0.1 V to 50 V) : Small hysteresis
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Measurement range	Nine levels : 50, 100, 500, 1k, 2k, 5k, 10k, 20kHz, and OFF Accuracy : ±0.1% FS
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Calibration value (CAL)	Output of 100%, 50% (addition) and 0% (absolute-value) of each range
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Response time	10 μsec or less (in case of successive input pulses) Two cycles of input frequencies + 50 μsec or less (in case of input pulses cut off)
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Resolution	16 bits
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Sensor power supply	DC 12 V : ±10% (50 mA or less for each channel)
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Monitor output	Accuracy : 5 V ±0.5% (at +FS), nonlinearity: ±0.1% FS
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Insulation	Between input-output and between channels: DC 500 V 50 MΩ or more
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Standard accessories	Voltage conversion adapter (FV-1A set of four)
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Optional accessories	Input cable (U-12), cable for monitor output (U-64)
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Charge amplifier card

CCA-40A,CCA-40A-F (with an anti-aliasing filter)

Conditioner for piezoelectric accelerometers

Measuring instrument	Piezoelectric accelerometer
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Applicable acceleration meter	Internal amplifier (voltage output-type)
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Number of input channels	8
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Sensor power supply	Constant current power (constant current: 4 mA, applied voltage: about DC 24 V, load 1 kΩ or less)
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Response frequency range	1 to 20 kHz (deviation: +1 dB, -3 dB)
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Measurement range	Nine levels: 20, 50, 100, 200, 500, 1,000, 2,000, 5,000 mV, and OFF Accuracy: ±1% FS
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Calibration value	DC CAL
	±100%, ±50% of each range Accuracy: ±0.2% FS
	AC CAL
	100%, 50% of each range Accuracy: ±1% FS Frequency accuracy: 100 Hz ±5%

Low-pass filter	Transmission property: 2nd-order Butterworth type Cutoff frequency: Five levels: 300, 1 k, 3 k, 10 k, and FLAT Cutoff accuracy: -3 ±1 dB Attenuation property: -12 ±1 dB/oct.
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Anti-aliasing filter (CCA-40A-F only)	8th-order Butterworth type Cutoff frequency : Automatically set to the sampling frequency × 0.25 Breaking property : -48 ±5 dB (at the sampling frequency × 0.5) Note: When the low-pass filter on the DCS-100A is set to "AUTO"
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Distortion factor	1% or less
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Resolution	16 bits
Monitor output	Accuracy: 5 V ±1% (at ±FS)
Added functions	Information read from the TEDS internal sensor
Standard accessories	Input cable (U-111)
Optional accessories	Integrated output cable (U-62), BNCP-C25J-A conversion adapter (BNC-miniature)

CAN card

CAN-40A,CAN-41A

These cards are used to measure data frames on the CAN (Controller Area Network). The CAN-40A records up to 16 types of data frames, while the CAN-41A (dual input) records data frames from two different communication lines (32 types in total), simultaneously with regular analog data.

Number of CAN ports	CAN-40A : 1 CAN-41A : 2 (two nodes)
Connector type	Dsub 9-pin (male)
Compatible CAN versions	Bosch2.0B active (based on ISO-11898 specifications) Switching between high and low speed CAN
Number of measurement IDs	CAN-40A : Up to 16 CAN-41A : Up to 32
Operating clock for CAN controller	40 MHz, 32 MHz
Communication rate (kbps)	At high-speed CAN : 1,000/800/500/250/125/ 100/ 83.3/62.5/50/33.3/25/20/10 At low-speed CAN : 125/100/83.3/62.5/50/33.3/ 25/20/10
Communication conditions	Selection of sampling points, sampling frequencies, and resynchronization jump widths
Measurement channel conditions	Start bit, bit length, data type, calibration factor (conditions for cutting out CAN data and converting them into physical quantity)
Graph display	Value display, frame display, and simultaneous graph display with analog data

Make a selection according to your system configuration.

Optional accessories

Voltage input box

VI-8A



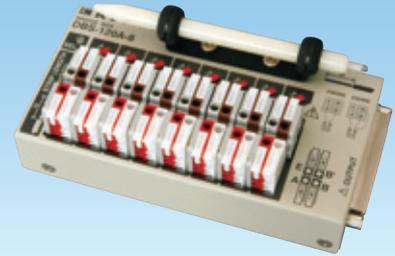
Model	Accessories		
	N-121	N-105	DBS-MOUNT
VI-8A	●		
VI-8A-T	●		●
VI-8A-C		●	
VI-8A-CT		●	●

N-121 : Connection cable with a connector dedicated to the CVM-40A (cable length 1.5 m)
N-105 : Connection cable with a connector dedicated to the CDV-40B/A (cable length 1.5 m)
DBS-MOUNT : Mounting plate

Measuring instrument	Voltage, piezoelectric accelerometer, charge-type accelerometer (when using a charge converter)
Number of input channels	8
Type of connector	BNC
Select LED	For checking the voltage input box connections
External dimensions	115 (W) × 22 (H) × 61.4 (D) mm (excluding protrusions)
Weight, approx.	Main body : 230 g With DBS-MOUNT installed : 290 g

Small bridge box

DBS-120A-8, DBS-350A-8



Model	Applicable gage resistance	Accessory		
		N-104	N-105	DBS-MOUNT
DBS-120A-8	120 Ω	●		
DBS-120A-8T		●		●
DBS-120A-8C			●	
DBS-120A-8CT			●	●
DBS-350A-8	350 Ω	●		
DBS-350A-8T		●		●
DBS-350A-8C			●	
DBS-350A-8CT			●	●

N-104: Connection cable with eight NDIS end connectors (cable length 1.5 m)
N-105: Connection cable with a connector dedicated to the CDV-40B/A (cable length 1.5 m)
DBS-MOUNT: Mounting plate

Measuring instrument	Strain gage
Number of input channels	8
Gage method	1-gage/2-wire, 1-gage/3-wire The 1-gage/2-wire and 1-gage/3-wire methods can be switched using a switch.
Gage connection terminal	One-touch lock-type terminal block
Select LED	For checking bridge box connections
External dimensions	115 (W) × 22 (H) × 61.4 (D) mm (excluding protrusions)
Weight, approx.	Main body: 250 g When installed with the DBS-MOUNT: 300 g
Wire range	Single wire: φ0.4 mm to φ1.2 mm (UL AWG 16 to 26) Twisted wire: 0.2 mm ² to 0.75 mm ² (UL AWG 20 to 24)

Small bridge box

DB-120V-8 DB-350V-8



Model	Applicable gage resistance	Accessory	
		N-104	N-105
DB-120V-8	120 Ω	●	
DB-120V-8C			●
DB-350V-8	350 Ω	●	
DB-350V-8C			●

N-104: Connection cable having eight NDIS end connectors (cable length 1.5 m)
N-105: Connection cable having a connector dedicated to the CDV-40B/A (cable length 1.5 m)

Measuring instrument	Strain gage	
Number of input channels	8	
Gage method	DB-120V-8 (C) 120 Ω 1-gage/2-wire 120 Ω 1-gage/3-wire 120 Ω 2-gage 120 Ω 2-opposite side 120 Ω 4-gage method	DB-350V-8 (C) 350 Ω 1-gage/2-wire 350 Ω 1-gage/3-wire 350 Ω 2-gage 350 Ω 2-opposite side 350 Ω 4-gage method
Gage connection terminal	One-touch lock-type terminal block	
Operating temperature range	0 to 40°C	
Operating humidity range	20 to 80%RH (No dew condensation)	
Vibration resistance	29.4 m/s ² (3G), 5 to 200 Hz	
External dimensions	286 (W) × 22 (H) × 61.4 (D) mm (excluding protrusions)	
Weight, approx.	Main body : 480 g	

CVM input cable (integrated connector, NDIS female connector 8 channels)

U-121 (0.5m)
U-122 (1.0m)
U-123 (1.5m)

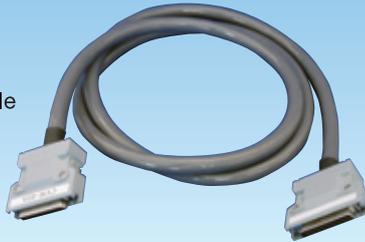


By connecting a strain gage transducer and by installing the FV-1A, you can connect voltage inputs or a piezoelectric acceleration sensor.

CVM input cable (both-end integrated connector)

N-121 (1.5m)

Input integrated cable for CVM (8 channels in a batch)



The CVM can be connected to a voltage input box or a bridge box (DBS, DB-V).

DPM input cable (integrated connector, NDIS male connector)

N-104 (1.5m)



A dynamic strain measurement card (DPM) can be connected to a bridge box (DBS, DB-V).

CDV input cable (both-end integrated connector)

N-105 (1.5m)



A strain-voltage measurement card (CDV) can be connected to a voltage input box or a bridge box (DBS, DB-V).

Voltage/piezoelectric input connector (1 channel)

FV-1A



The installation of the "FV-1A-Voltage/piezoelectric input (BNC connector)" provides for a connection with voltage input or a piezoelectric acceleration sensor.

Monitor output cable (integrated connector, BNC connector)

U-62



The eight BNC connectors produce monitor outputs from the CVM. (Also, a CTA card or a CCA card can be used.)

AC adapter for the EDX-200A-1

UIA345-12
For AC 100 to 240 V



Remote control unit RCU-42A

RCU-42A
Compatible with the EDX-3000A



You can conduct the same operations as those with the front panel of the main body. The buzzer alerts you to any abnormality.

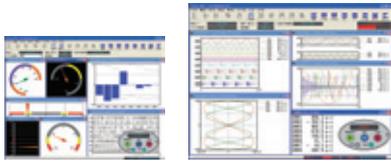
Control functions	REC/PAUSE (Starts/pauses recording) STOP (Stops recording) BAL. (Performs balancing) OPT. (Allocates arbitrary functions) VOICE MEMO (Records voices using the internal microphone)
Display	LED display of "Recording / Standby Recording / Performing Balance"
Cable length	1.5 m

dynamic data acquisition software

DCS-100A

Main functions software

- **Diverse graph/numerical value monitor display**
Freely arrange the graph/numerical value window. PC monitor screen can be set and stored in a free layout fitting for each experiment of six types of graph windows (Time-series graph, bar graph, X-Y graph, digital graph, circle graph, and bar meter).
- **Both data recording window and data reproduction window can be monitored simultaneously.**
- **PC Recorded data can be stored directly to hard disk.** (Sampling frequency and measuring channel number are limited.)
- **Data processing/analysis software is possible to start from toolbar.**
DAS-200A



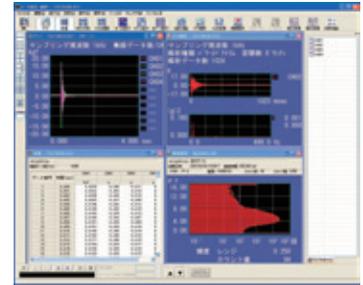
data analysis software

DAS-200A

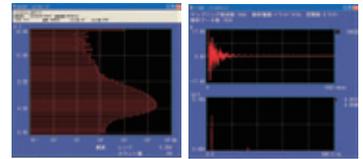
This software is used to read, reproduce, and analyze data file in KYOWA standard data file formats (extension KS1/KS2). The software can also reproduce animations and voice notes.

Main functions software

- **Data reproduction**
Y-time graph, X-Y graph, numerical value, file information, MAX/MIN display
- **Data analysis**
Statistical operation, arithmetic operation, FFT analysis, histogram analysis, filter processing, differentiation/integration, lifetime prediction
- **Applicable measuring instrument**
 - EDX-10A series
 - EDX-100A
 - EDX-200A
 - EDX-2000B
 - EDX-3000A
 - EDS-400A
 - PCD-300 series
 - UCAM-550A
 - NTB-500A



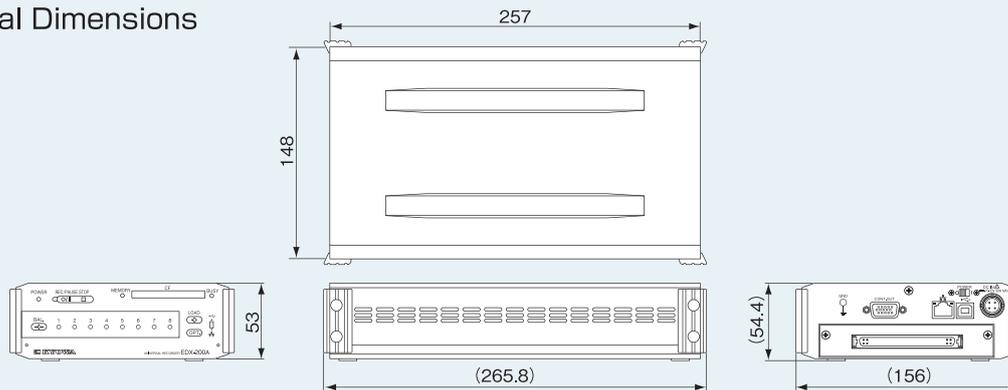
Full screen



Frequency analysis

FFT analysis

External Dimensions



www.kyowa-ei.com

Specifications are subject to change without notice for improvement.



Safety precautions

Be sure to observe the safety precautions given in the instruction manual, in order to ensure correct and safe operation.



JQA-0821
JQA-EM4824

Reliability through integration

KYOWA

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Manufacturer's Representative