

EDX-10 Series

Compact Recording System



Compact & lightweight, with a simple configuration, all channels synchronous 20 kHz high-speed sampling (For 4 channels)

Control Unit EDX-10B



This unit controls measuring units and performs communication with PC via USB interface.

The EDX-10 series is measuring instruments that measure simply by being connected to a PC using the USB interface.

The EDX-11A and EDX-14A measure strain-gage transducers, pressure, displacement, etc.

The EDX-12A measures voltage, the EDX-15A measures force, pressure, displacement, and voltage, and the EDX-13A measures temperature with a thermocouple.

A single unit for 4-channel measurement, 4 units for 16 channels, thus it is suitable for small-scale measurement.

Up to 4 measuring units are powered by USB interface, no separated power supply is required.

- With stacked connection, no synchronization cable is required, therefore wiring-saving.
- Max. sampling frequency 20 k Hz for 4 channels of a single measuring unit in sync.
- Compact & lightweight
- Simple connection using USB interface
- The standard accessory, Dynamic Data Acquisition Software DCS-100A, makes it easier to monitor or acquire data.
- Data is recorded as KS2, which is Kyowa standard file format. The optional Data Analysis Software reads the file.
- Sensors are easily connected with one-touch input cables or input adapters.

Specifications

Interfaces	USB2.0 compliant Connector configuration: USB standard B receptacle
Measurement Units	Max. 4 (16 channels)
Sampling Frequencies	1 Hz to 20 k Hz (1 to 4 channels) 1 Hz to 10 k Hz (1 to 8 channels) 1 Hz to 5 k Hz (1 to 16 channels)
Operating Temperature	0 to 40°C
Operating Humidity	20 to 90% (Non-condensing)
Power Supply	5 VDC USB bus-power ^{*1, *2} , or AC adapter ^{*3}
Current Consumption	140 mA or less (5 VDC)
Weight	Approx. 170 g
Dimensions	84.0 W × 26.6 H × 84.0 D mm (Excluding protrusions)
Control Software	DCS-100A
Compliance	Directive 2014/30/EU (EMC) Directive 2011/65/EU, (EU)2015/863 (10 restricted substances) (RoHS)

Standard Accessories USB cable N-38 (1 m)
Ground wire P-72 (5 m)
DVD (Dynamic data acquisition software DCS-100A)

Optional Accessories AC adapter UN310-0515 (For U.S.A.: UN312-0520)

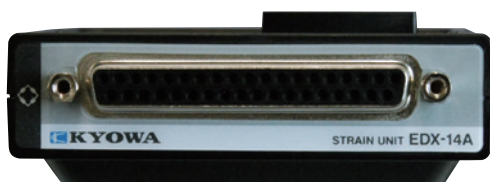
^{*1} When using USB bus-power, please connect directly to the USB port of the PC without using a USB hub.

^{*2} The number of measuring units at USB bus-power operation, refer to the following table.

USB ports	The number of EDX-11A	The maximum number of the unit
USB 3.0	0	Max. 4
	1	Max. 2
	2	
USB 2.0	0	Max. 2
	1	Max. 1

^{*3} When using AC adapter, the maximum connection units is 4 units in any combination of EDX-11A, 12A, 13A, 14A and 15A.

■ Strain Measuring Unit EDX-14A



A low power consumption unit for measuring strain based on the DC bridge excitation.

Specifications

Measuring Targets	Strain-gage transducers, strain gages*
Channels	4
Measuring Range	10 k, 50 k $\times 10^{-6}$ strain (2 steps)
Compatible Bridge Resistance	120 Ω to 1 k Ω
Bridge Excitation	1 VDC
Gage Factor	2.00 fixed
Range Accuracy	Within $\pm 0.3\%$ FS
Balance Adjustment	Within $\pm 1/2$ F.S. of setting range
Nonlinearity	Within $\pm 0.1\%$ FS
AD Converter	24 bits
Frequency Response	DC to 2 kHz
LPF	Transfer characteristic: 2nd order Butterworth Cutoff frequencies: 100 Hz, 2 k Hz
Operating Temperature	0 to 40°C
Operating Humidity	20 to 90% (Non-condensing)
Input Connector	D-sub 37-pin connector
Power Supply	5 VDC supplied by control unit
Current Consumption	140 mA or less (120 Ω load with all channels connected, at power supply 5 VDC)
Weight	Approx. 150 g
Dimensions	84.0 W $\times$ 26.6 H $\times$ 84.0 D mm (Excluding protrusions)
Compliance	Directive 2014/30/EU (EMC) Directive 2011/65/EU, (EU)2015/863 (10 restricted substances) (RoHS)

*Bridge boxes or input adapters are required for strain measurement.

Standard Accessories	Strain input cable U-124 (30 cm)
Optional Accessories	Bridge box connection cable U-126 (50 cm) Input connector set EDX10-DSUB Input adapter UI-51A One-touch type input adapter UI-52A Bridge adapter for quarter bridge system UI-53B-120/350 Bridge adapter for quarter bridge system UI-54B-120/350 One-touch type input adapter UI-55A

■ Strain/Voltage Measuring Unit EDX-15A



A unit for measuring both strain and voltage.

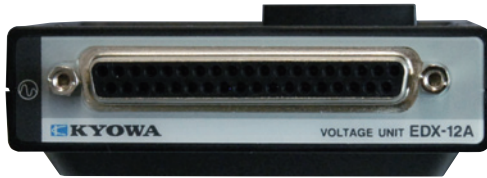
Specifications

Measuring Targets	Strain gage transducer and strain gage (*1) Voltage (Unbalanced input)
Channels	4
Measuring Range	Strain measurement: 10k, 50k $\times 10^{-6}$ strain (2 range) Voltage measurement: 10, 50 V (2 range)
Compatible Bridge Resistance	Strain measurement: 120 to 1k Ω Voltage measurement: -
Bridge Excitation	Strain measurement: 1 VDC Voltage measurement: -
Gage Factor	Strain measurement: 2.00 fixed Voltage measurement: -
Range Accuracy	Within $\pm 0.3\%$ FS
Balance Adjustment	Within $\pm 1/2$ F.S. of setting range
Nonlinearity	Within $\pm 0.1\%$ FS
AD Converter	24 bits
Frequency Response	DC to 2 kHz
LPF	Transfer characteristic: 2nd order Butterworth Cutoff frequencies: 100 Hz, 2 k Hz
Operating Temperature	0 to 40°C
Operating Humidity	20 to 90% (Non-condensing)
Input Connector	D-sub 37-pin connector
Power Supply	5 VDC supplied by control unit
Current Consumption	150 mA or less (120 Ω load with all channels connected, at power supply 5 VDC)
Weight	Approx. 150 g
Dimensions	84.0 W $\times$ 26.6 H $\times$ 84.0 D mm (Excluding protrusions)
Compliance	Directive 2014/30/EU (EMC) Directive 2011/65/EU, (EU)2015/863 (10 restricted substances) (RoHS)

*Bridge boxes or input adapters are required for strain measurement.

Standard Accessories	Strain input cable U-124 (30 cm) Conversion adapter FV-1A $\times 4$
Optional Accessories	Bridge box connection cable U-126 (50 cm) Input connector set EDX10-DSUB Input adapter UI-51A One-touch type input adapter UI-52A Bridge adapter for quarter bridge system UI-53B-120/350 Bridge adapter for quarter bridge system UI-54B-120/350 One-touch type input adapter UI-55A BNC input cable U-125 (30 cm)

■ Voltage Measuring Unit EDX-12A



A unit for measuring voltage

Specifications

Measuring Targets	Voltage
Channels	4 (Single end)
Measuring Range	10 V, 50 V (2 steps)
Range Accuracy	Within $\pm 0.3\%$ FS
Balance Adjustment	Within $\pm 1/2$ F.S. of setting range
Nonlinearity	Within $\pm 0.1\%$ FS
AD Converter	24 bits
Frequency Response	DC to 2 kHz
LPF	Cutoff frequencies: Lo(100Hz), Hi(2kHz)
	Transfer characteristic: 2nd order Butterworth
Operating Temperature	0 to 40°C
Operating Humidity	20 to 90% (Non-condensing)
Input Connector	D-sub 37-pin connector
Power Supply	5 VDC supplied by control unit
Current Consumption	110 mA or less (5 VDC)
Weight	Approx. 150 g
Dimensions	84.0 W × 26.6 H × 84.0 D mm (Excluding protrusions)
Compliance	Directive 2014/30/EU (EMC)
	Directive 2011/65/EU, (EU)2015/863 (10 restricted substances) (RoHS)

Standard Accessories	Input adapter UI-51A
Optional Accessories	BNC input cable U-125 (30 cm) Bridge box connection cable U-126 (50 cm) Input connector set EDX10-DSUB One-touch type input adapter UI-52A

■ Thermocouple Measuring Unit EDX-13A



A unit for measuring temperature by using thermocouples

Specifications

Measuring Targets	Thermocouples
Channels	4
Measuring Targets	K, T, J, N (Resistance of thermocouple: 1 kΩ or less)
	(See the table below for details about the temperature measuring range, etc.)
Check Functions	Burnout check
AD Converter	24 bits
Sampling System	Scanning
Inside Sampling Frequencies	Approx. 0.5 Hz, approx. 2.0 Hz
Operating Temperature	0 to 40°C
Operating Humidity	20 to 90% (Non-condensing)
Input Connector	Screw type terminal box
Power Supply	5 VDC supplied by control unit
Current Consumption	120 mA or less (5 VDC)
Weight	Approx. 130 g
Dimensions	84.0 W × 26.6 H × 84.0 D mm (Excluding protrusions)
Compliance	Directive 2014/30/EU (EMC)
	Directive 2011/65/EU, (EU)2015/863 (10 restricted substances) (RoHS)

Standard Accessories	Terminal box 1piece, screwdriver 1piece
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Types	Range	Accuracy (Resolution: 0.1 °C)		Accuracy of internal reference junction compensator
K	-200.0 to 1370.0°C	-200.0 to below -100.0°C -100.0 to 1370.0°C	$\pm(0.2\% \text{ of reading} + 0.6^\circ\text{C})$ $\pm(0.1\% \text{ of reading} + 0.4^\circ\text{C})$	$\pm 1.0^\circ\text{C}$ (Input terminal temperature at equilibrium) (Ambient temperature: $25 \pm 10^\circ\text{C}$) Mount the EDX-13A on the bottom when using it with measuring units other than the EDX-13A.
T	-200.0 to 400.0°C	-200.0 to below -100.0°C -100.0 to 400.0°C	$\pm(0.2\% \text{ of reading} + 0.6^\circ\text{C})$ $\pm(0.1\% \text{ of reading} + 0.4^\circ\text{C})$	$\pm 2.0^\circ\text{C}$ (Input terminal temperature in equilibrium) (For temperatures other than those in the ambient temperature and operating temperature described above)
J	-200.0 to 1200.0°C	-200.0 to below -100.0°C -100.0 to 1200.0°C	$\pm(0.2\% \text{ of reading} + 0.6^\circ\text{C})$ $\pm(0.1\% \text{ of reading} + 0.4^\circ\text{C})$	
N	-200.0 to 1300.0°C	-200.0 to below -100.0°C -100.0 to 1300.0°C	$\pm(0.2\% \text{ of reading} + 0.6^\circ\text{C})$ $\pm(0.1\% \text{ of reading} + 0.4^\circ\text{C})$	

Note: The measurement accuracy does not include the accuracy of the internal reference junction compensator and thermocouples.

The measurement error of the internal reference junction compensator

= Error due to the measurement accuracy

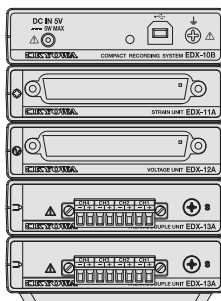
+ Error of the internal reference junction compensator

+ Error of the thermocouples

To satisfy the accuracy of internal reference junction compensator $\pm 1.0^\circ\text{C}$, measurement conditions are as follows.

Condition 1: Mount the EDX-13A on the bottom when using it with measuring units other than the EDX-13A.

Condition 2: When measuring data, put the units down.



■ Strain Measuring Unit EDX-11A



A unit for measuring strain based on the DC bridge excitation.

Specifications

Measuring Targets	Strain-gage transducers, strain gage*
Channels	4
Measuring Range	10 k, 50 k × 10 ⁻⁶ strain (2 steps)
Balance Adjustment	Within ±1/2 F.S. of setting range
Compatible Bridge Resistance	120 Ω to 1 kΩ
Bridge Excitation	2 VDC
Gage Factor	2.00 fixed
Range Accuracy	Within ±0.3%FS
Nonlinearity	Within ±0.1%FS
AD Converter	24 bits
Frequency Response	DC to 2 kHz
LPF	Transfer characteristic: 2nd order Butterworth Cutoff frequencies: 100 Hz, 2 k Hz
Operating Temperature	0 to 40°C
Operating Humidity	20 to 90% (Non-condensing)
Input Connector	D-sub 37-pin connector
Power Supply	5 VDC supplied by control unit
Current Consumption	180 mA or less (120 Ω load with all channels connected, at power supply 5 VDC)
Weight	Approx. 150 g
Dimensions	84.0 W × 26.6 H × 84.0 D mm (Excluding protrusions)
Compliance	Directive 2014/30/EU (EMC) Directive 2011/65/EU, (EU)2015/863 (10 restricted substances) (RoHS)

*Bridge boxes or input adapters are required for strain measurement.

Standard Accessories	Strain input cable U-124 (30 cm)
Optional Accessories	Bridge box connection cable U-126 (50 cm) Input connector set EDX10-DSUB Input adapter UI-51A One-touch type input adapter UI-52A, UI-55A Bridge adapter for quarter bridge system UI-53B-120/350 Bridge adapter for quarter bridge system UI-54B-120/350

DCS-100A software (standard accessory), specification for control of EDX-10B

*For details of DCS-100A, see chapter 4.

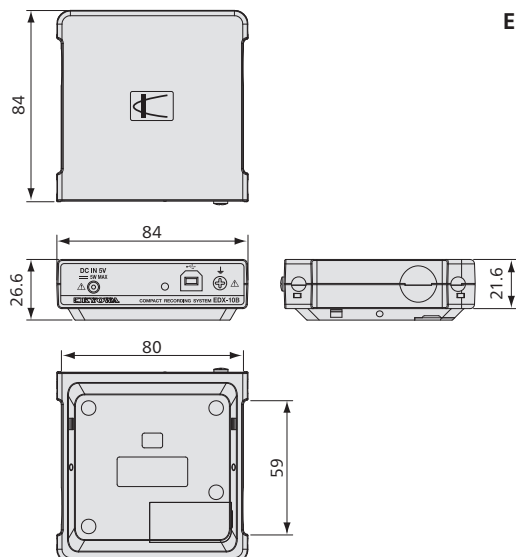
Units	Up to 4 units (up to 16 channels)
Interfaces	USB
Saving Format	Saves the measured data in the PC folder in the KS2 format file.
Channel Conditions	Measuring ON/OFF, Measuring mode, Range, Low-pass filter, Balance adjustment ON/OFF, Calibr. const., Offset, Unit, Channel name, Measuring range, Rated capacity, Rated output, Deci Digits, Chk. Val. (Up), Chk. Val. (Down)(Display items can freely be selected.)
Sampling Frequency	1 Hz to 20k Hz (1/2/5 system) *Limited by the number of channels.
Measure Mode	Manual, Manual (Set Record Data), Interval, Analog Trigger
Manual Measurement	Records data from REC to STOP or from REC to the number of data, specified on the Manual (Set Record Data).
Interval Measurement	Records data automatically based on the pre-set starting time and recording interval.
Analog Trigger Measurement	Starts/stops recording data based on the pre-set trigger conditions.
Trigger Condition	End trigger Settable Delay Up to 262144 data/CH for both start and end. The delay time varies with the number of channels. Trigger channel Any 1 channel Trigger level Physical quantity Trigger slope Positive or Negative
Static Measurement	Static measurement Every time the DCS-100A starts recording data, the DCS-100A additionally saves the moving-averaged measured data in a single CSV format file. *Measure Mode: Manual and Interval only.
Repeated Recording	When recording data for a long time, the DCS-100A saves data, every pre-set number of data or every pre-set interval, in the KS2 format file. *Measure Mode: Manual (Set Record Data) only.
Setting Environment	
Setting Hardware Configuration	Sets the device names and measuring units. Sets the device name to the EDX-10B. Loads the hardware configurations from the EDX-10B.



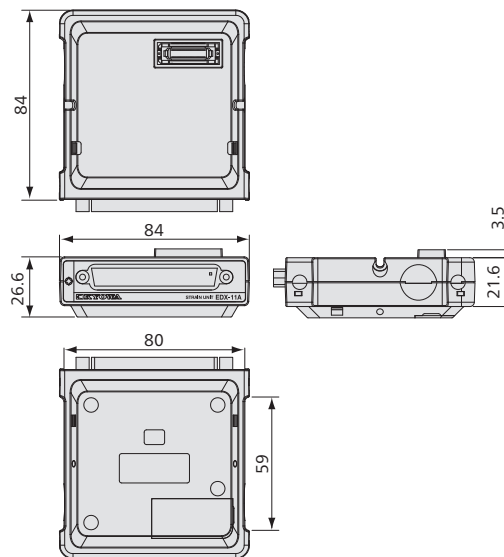
Data Recorders/
Analyzers

■ Dimensions

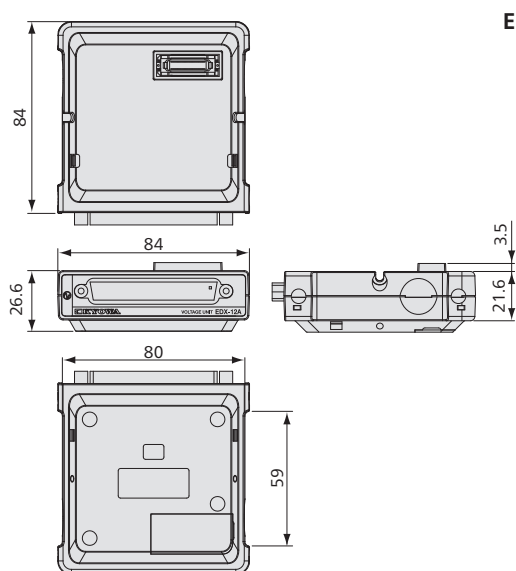
EDX-10B



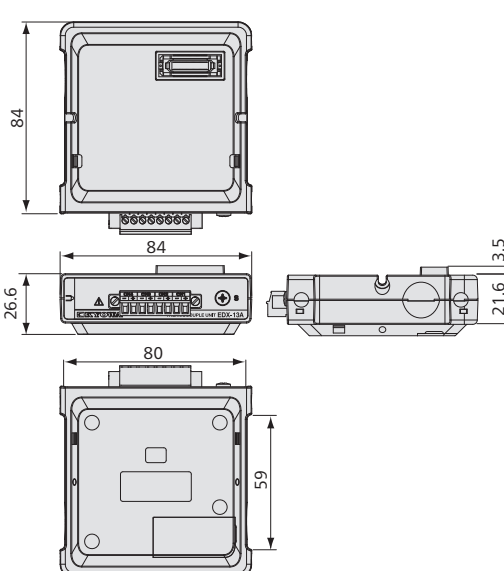
EDX-11A



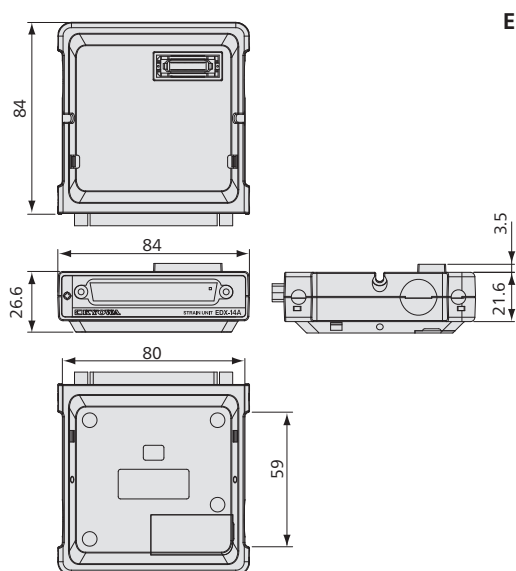
EDX-12A



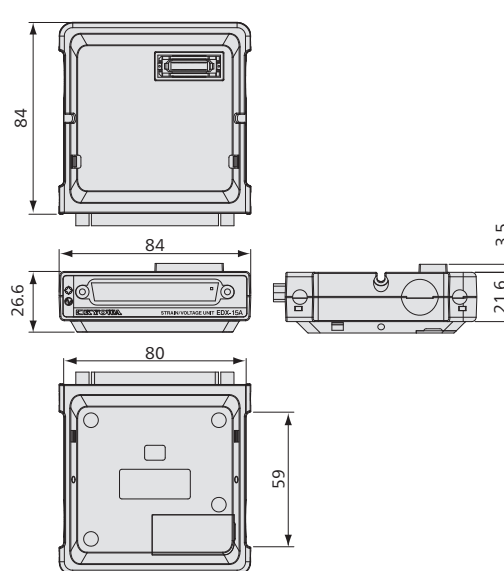
EDX-13A



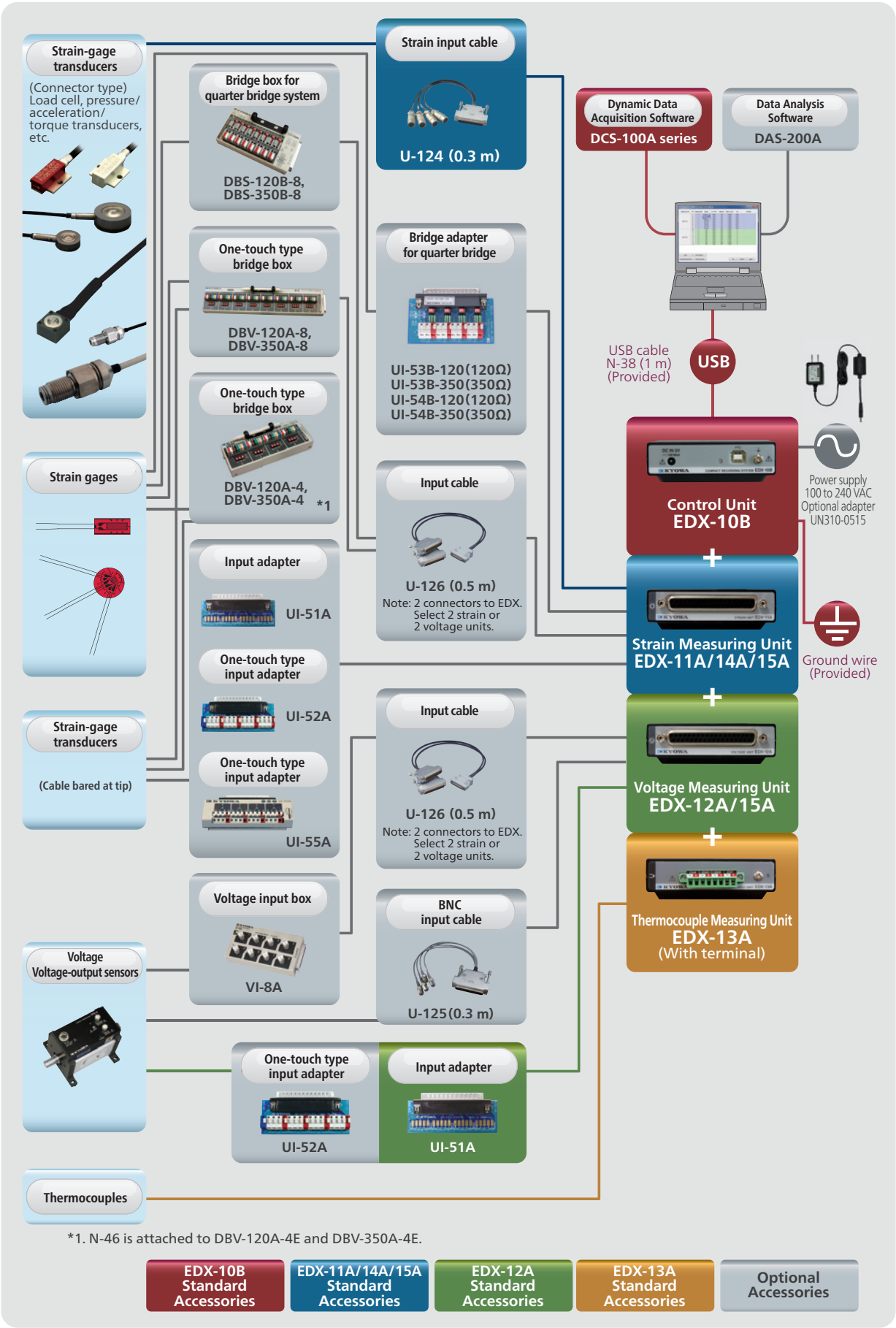
EDX-14A



EDX-15A



Simplified configuration of the EDX-10 series



*1. N-46 is attached to DBV-120A-4E and DBV-350A-4E.