

 **KYOWA**



INSTRUMENTS  
**TECHNO  
TEST**

# PCD-400B Series

Sensor Interface

Easy to use,  
Easy to measure.

A simpler way to measure strain.



# Easy to use, with no wasted effort. Simply connect the strain measuring instrument to a PC.

All the functions required to measure strain,  
in a simple and compact form.  
No need for complex operations, from preparing for measurement  
to configuring settings.



## POINT 1 | Simple to Connect and Configure

### No bridge box required

Contains a built-in bridge circuit, and can be used with the strain gage connected directly to the input adapter. The input adapter can be removed, so it can be reattached to the main unit once it has been wired.

### Helps to prepare for measurement

Use a TEDS compatible input adapter to automatically enter calibration coefficients. This not only reduces time spent on preparation, but can also prevent configuration mistakes.

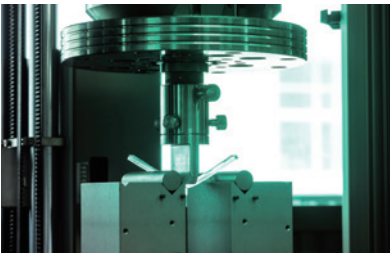
\* When TEDS compatible strain-gage transducer and UI-10A/11A input adapter are connected.

### Usage Applications



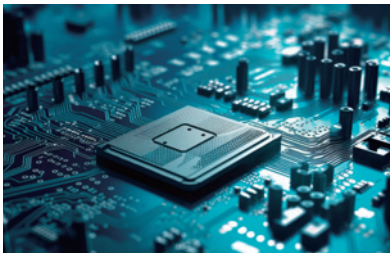
#### Educational institutions

The simple structure makes the measuring instrument easy to use, with little or no measurement experience required.



#### R&D

Portable and resistant to noise, it is perfect for small-scale development testing.



#### PCB stress measurement

Measuring strain on a PCB during assembly, testing, and use plays an important role in evaluating quality and analyzing failure.



Channels  
**4/unit**

Sampling Frequencies (Max.)  
**10 kHz**

Frequency Response  
**200 Hz\***  
\* When measuring strain

Measuring Targets  
**Strain, Voltage\***  
\* Voltage measurement: PCD-430B only

\* Sample measurement values

POINT / 2 | **Key Functions**

**Resistant to noise**

The product uses a carrier-type amplifier with excellent stability and resistance to noise. Inter-channel isolation\* helps resist noise.

\* Excluding PCD-430B voltage measurement mode

**Easy to expand**

The product can be expanded up to four units and 16 channels, with a maximum sampling frequency of 10 kHz (synchronous sampling of all channels) even when upgraded. Expansion requires no additional cabling.

**LINEUP**



PCD-430B (Strain, Voltage)



PCD-400B (Strain)

**Expansion Example**



Can be expanded with any combination of PCD-400B/430B.  
\* ST-1B Stacking Kit (page 3) used to connect main units.

# Various Input Adapters

Select the appropriate input adapter based on the sensor type and cable specifications. Easy attachment and removal.



## LINEUP Optional Accessories

### UI-10A

TEDS Compatible

Input Adapter for Strain Gage Transducer



UI-10A is for use with strain gage transducers, and can be easily attached/removed.

Sensor Connection

NDIS4102 (7 pins) connectors

### UI-30A

For voltage only

Voltage Input Adapter



UI-30A is for use with voltage and voltage output-type sensors, and can be easily attached/removed.

Sensor Connection

BNC connectors

### UI-55A

To connect a strain gage

One-touch Type Input Adapter



Low-cost input adapter.

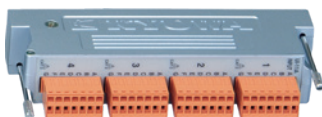
Sensor Connection

One-touch type terminals (4-wire)

### UI-11A

TEDS Compatible

Input Adapter for Strain Gage



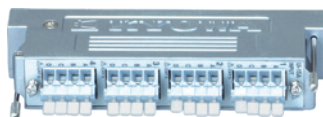
UI-11A makes complex wiring simple, as the terminal block section can be attached/removed for each channel.

Sensor Connection

Clamp-type terminals (6-wire)

### UI-15A

Input Adapter for Strain Gage with Operating Lever



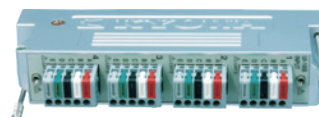
UI-15A allows for the terminal block to be operated without any tools.

Sensor Connection

Clamp-type terminals with operating levers (4-wire)

### UI-16B

One-touch Type Input Adapter for Strain Gage



UI-16B uses the same color coding as Kyowa strain gage transducers.

Sensor Connection

One-touch type terminals (4-wire)

## Related Accessories Optional Accessories

### FV-1A

Conversion Adapter



Used to connect a voltage or voltage output-type sensor with a BNC connector to UI-10A.

### N-97

Connection Cable



Used to connect an NDIS4102 (7-pin) transducer to UI-11A/15A/16B/55A.

### ST-1B

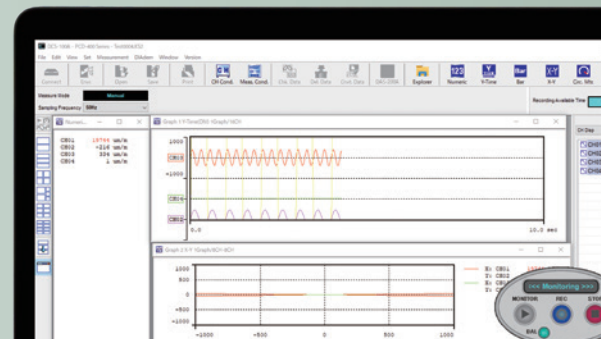
Stacking Kit



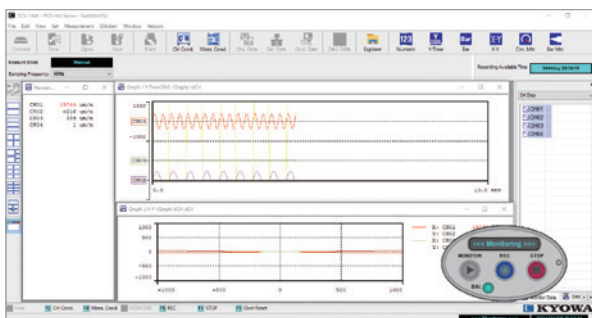
This set consists of an adapter to connect main units and stacking fixtures to attach to the sides of the main units.

# Easy-to-operate Software

Our lineup of specialized software



## DCS-100A Dynamic Data Acquisition Software Standard Accessories



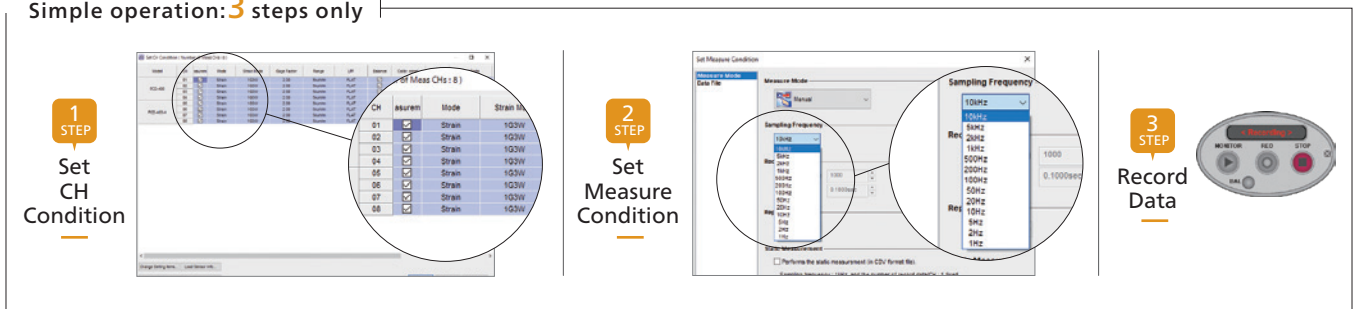
### Control software highly praised for its ease-of-use

This software covers it all, from setting of measuring conditions to recording and reproducing data.

It can be used to record data in real-time, and to display multiple graphs and figures in a format that is easy to view and understand.

We also offer optional software to use a web camera to record video and perform calculations in real-time.

Simple operation: **3** steps only



## PCAS-100A PCA Stress Measuring Software Optional Accessories



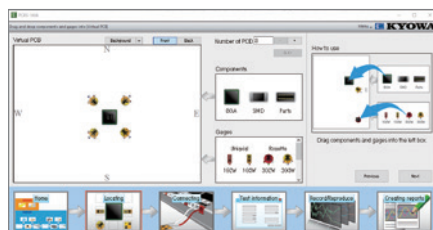
### Easily evaluate PCB reliability

This software is specialized for reliability evaluation of PCB. Simply follow the instruction on the software screen to easily determine where to attach the gage, configure the device, record data, and create reports in IPC/JEDEC-9704A\* format.

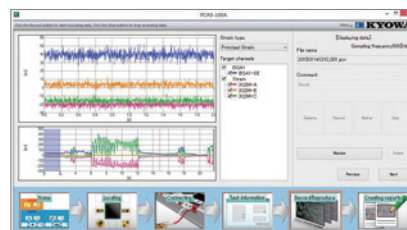
\* The method of evaluating PCBs with strain gages is provided by IPC/JEDEC-9704A. The method can be effectively for various purposes including quality evaluation and trouble analysis.

\* PCAS-1000B (a set containing PCD-400B, PCAS-100A, and standard accessories) is also available. Please contact us for details.

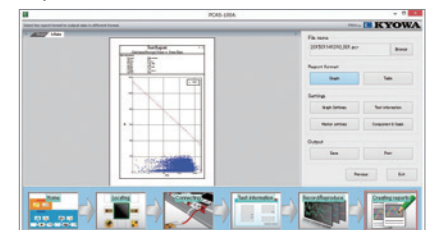
#### Virtual PCB



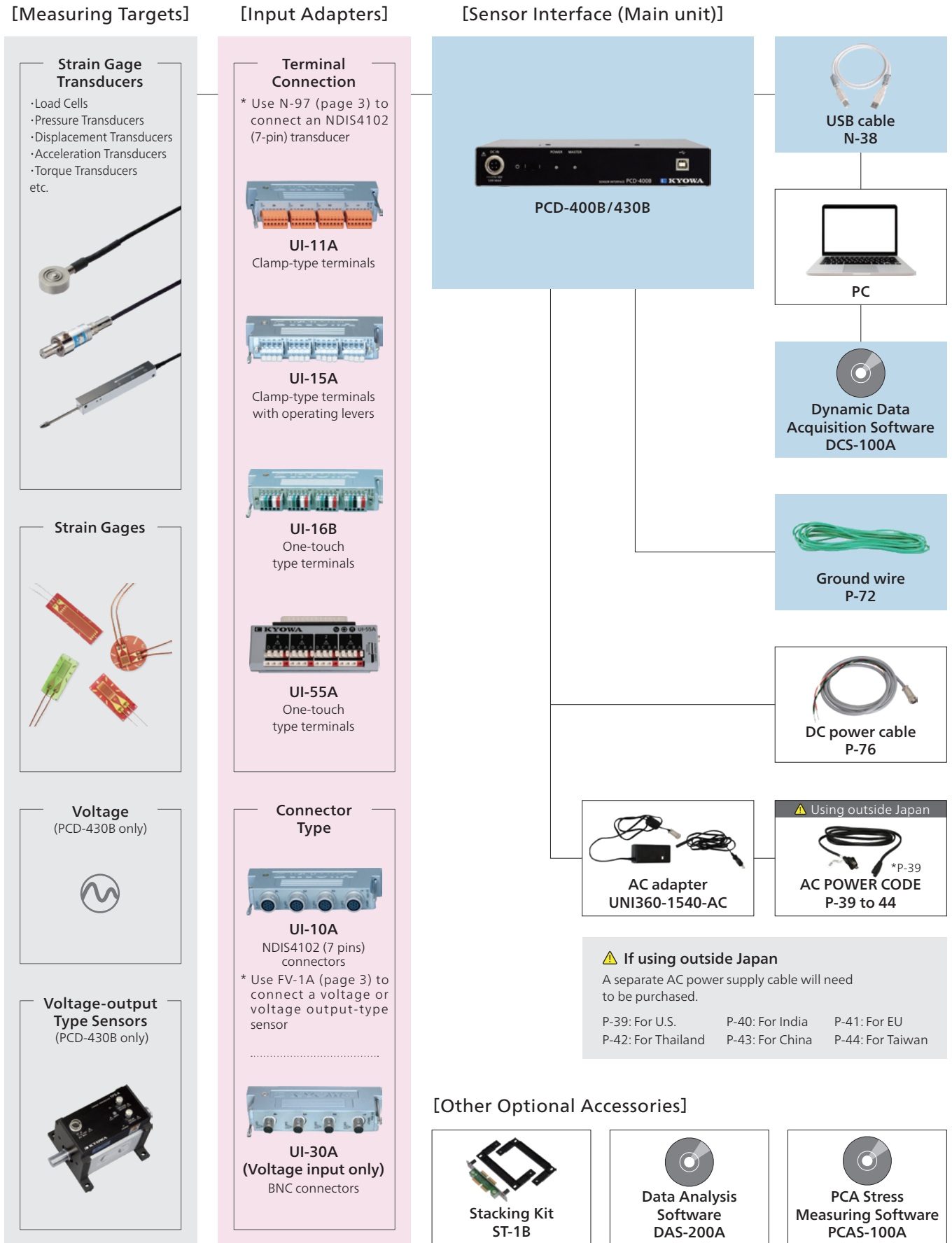
#### Record



#### Reports



# Block Diagram



■ : PCD-400B Series main unit and standard accessories.

- One ST-1B Stacking Kit is required for each connected unit.
- That the PCD-400B series cannot connect with the PCD-400A/430A.
- See page 6 for other standard accessories and optional accessories.

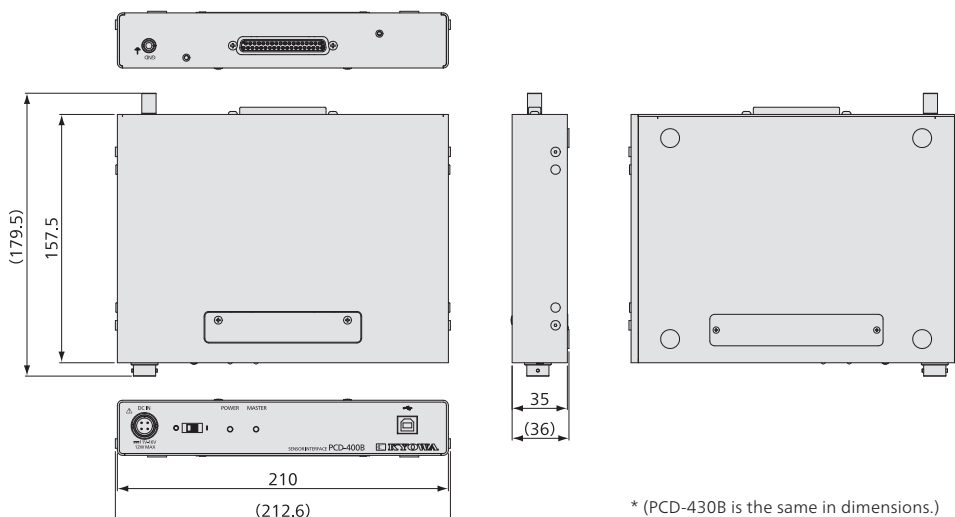
# Specifications

## PCD-400B, PCD-430B common specifications

Measuring Targets	Strain gages and strain-gage transducers
Channels	4
Input Form	Balanced differential input
Synchronous Operation	Up to 4 units by 16 channels
Compatible Gage Resistance	Quarter bridge system 2-wire, 3-wire: 120 Ω Half bridge system, full bridge system: 120 to 1000 Ω
Input Connector	D-sub 37-pin connector
Bridge Excitation	AC 2 V <sub>rms</sub>
Gage Factor	2.00 fixed
Balance Adjustment	Resistance: Within ±2% (±10 k × 10 <sup>-6</sup> strain) Capacitance: Within 5000 pF
Balance Adjustment Methods	Resistance: Auto balance Capacitance: CST method (Capacitance self-tracking)
Nonlinearity	Within ±0.1% FS
Range	200, 500, 1 k, 2 k, 5 k, 10 k, and 20 k × 10 <sup>-6</sup> strain -7 steps Accuracy: Within ±0.5% FS
Frequency Response	DC to 200 Hz Deviation: Within ±10%
Sampling Frequencies	Max. 10 kHz (Synchronous 4-unit sampling for 16 channels at 10 kHz)
LPF	Transfer characteristic: 2nd order Butterworth Cutoff frequencies: 10, 30, 100 Hz, and FLAT (4 steps) Amplitude ratio at cutoff point: -3±1 dB Attenuation: -12±1 dB/oct.
AD Converter	24 bits
Setting Value Storage	The range and balance adjustment value etc. are written to nonvolatile memory.
TEDS	Reads information from TEDS-installed sensors. (Input adapters: UI-10A and UI-11A only) Channel name writing (If the manufacturer's ID is Kyowa)
Interfaces	USB2.0 (Conforms to High-speed USB standards. USB3.0 supported)
Stability	Temperature Zero point: Within ±0.2 × 10 <sup>-6</sup> strain per °C Sensitivity: Within ±0.05%/°C Time Zero point: Within ±0.5 × 10 <sup>-6</sup> strain per 8 h Sensitivity: Within ±0.15%/8 h
Withstand Voltage	250 VAC for 1 minute between input and case 250 VAC for 1 minute between input channels
Operating Temperature	0 to 40°C
Operating Humidity	20 to 85% (Non-condensing)
Vibration Resistance	±29.42 m/s <sup>2</sup> (3 G) 5 to 200 Hz (12 cycles for each axis, 10 minutes/cycle) *Unstacked
Power Supply	11 to 16 VDC Connector type: RM12BRD-4PH (Hirose)
Current Consumption	PCD-400B: 0.7 A or less (12 VDC) 0.6 A or less (15 VDC) PCD-430B: 0.9 A or less (12 VDC) 0.7 A or less (15 VDC)
Dimensions	210 W × 35 H × 157.5 D mm (Excluding protrusions)
Weight	PCD-400B: Approx. 650 g PCD-430B: Approx. 670 g
Compliance	Directive 2011/65/EU, (EU) 2015/863 (10 restricted substances) (RoHS) Directive 2014/30/EU (EMC)
Degree of Protection	IP30 (JIS C 0920/IEC 60529) *Except when the one-touch type input adapter UI-55A is connected and when the adapter is not connected.

\* The specifications apply to the state in which the temperature has stabilized after a preheating time of 1 hour.

## Dimensions



\* (PCD-430B is the same in dimensions.)

## PCD-430B about voltage measurement mode

Measuring Targets	Voltage
Input Form	Unbalanced
Range	1, 2, 5, 10, 20, and 50 V -6 steps Accuracy: Within ±0.2% FS
Frequency Response	DC to 1 kHz, deviation: -3 to 1 dB
HPF	2 steps of 0.2 Hz, OFF
LPF	Transfer characteristic: 2nd order Butterworth Cutoff frequencies: 10, 30, 100, 300 Hz and FLAT (5 steps) Amplitude ratio at cutoff point: -3±1 dB Attenuation: -12±1 dB/oct.
Stability	Temperature Zero point: ±0.008%FS/°C Sensitivity: ±0.02%/°C Time Zero point: ±0.03%FS/8 h Sensitivity: ±0.1%/8 h
Withstand Voltage	None

## DCS-100A Specifications of Operating Environment

OS	Windows®8.1, Windows®10, Windows®11 English/Japanese, 32/64 bits support If 64-bit OS, operate in WOW64 (Windows 32-bit On Windows 64-bit) environment
CPU	Core i5 2 GHz or advanced
Memory	If 32-bit OS, 2 GB or more If 64-bit OS, 4 GB or more

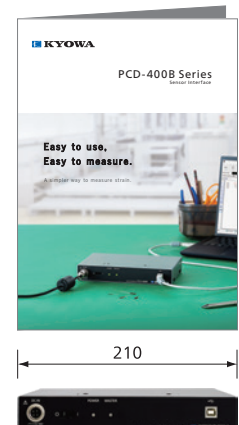
## Standard Accessories

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

## Optional Accessories

- AC adapter UNI360-1540-AC \*
- \* If using outside Japan, a separate AC power supply cable will need to be purchased.
- USB cable N-39 (2 m)
- DC power cable P-76 (2 m)
- Connection cable N-97 (10 cm)
- Stacking kit ST-1B
- NDIS-BNC Conversion adapter FV-1A (For PCD-430B)
- Input adapter for strain gage transducer UI-10A (TEDS compatible)
- Input adapter for strain gage UI-11A (TEDS compatible)
- Input adapter for strain gage with operating lever UI-15A
- One-touch type input adapter for strain gage UI-16B
- One-touch type input adapter UI-55A
- Voltage input adapter UI-30A (For PCD-430B)
- Data analysis software DAS-200A

Width (Approx. 210 mm) is the same as the width of the pamphlet, and corresponds to A4 size!





## You can count on Kyowa.

Feel free to contact us, if there is something you would like to know or do not understand about Kyowa products.

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#### Safety Precautions

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

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