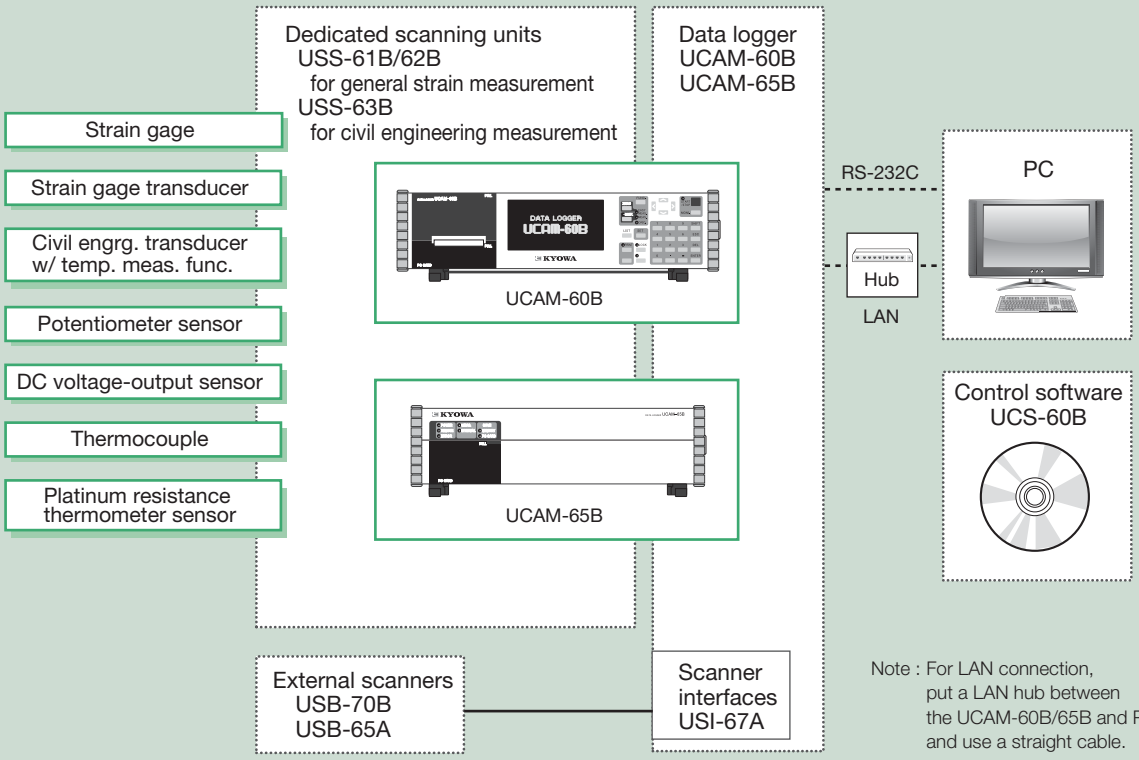
Data Loggers

Data loggers are designed to measure static strain, a phenomenon where the subject strain does not change at all or slowly changes. As seen in load tests of large-scale structures, static strain is often measured in several hundred channels and under dozens of load conditions.
Data loggers are available in 2 types: stand-alone and PC-controlled. Both are oriented to automatic multi-channel measurement as intelligent, expansible systems.
A data logger can stably measure microvolt signals in strain/stress measurement indoors and outdoors. Besides that advantage, some recently developed data loggers have a processing capability incorporated into the portable package.
Advancements in electronic components, progress in multimedia in information-related fields and downsizing of equipment have generated the following demands:

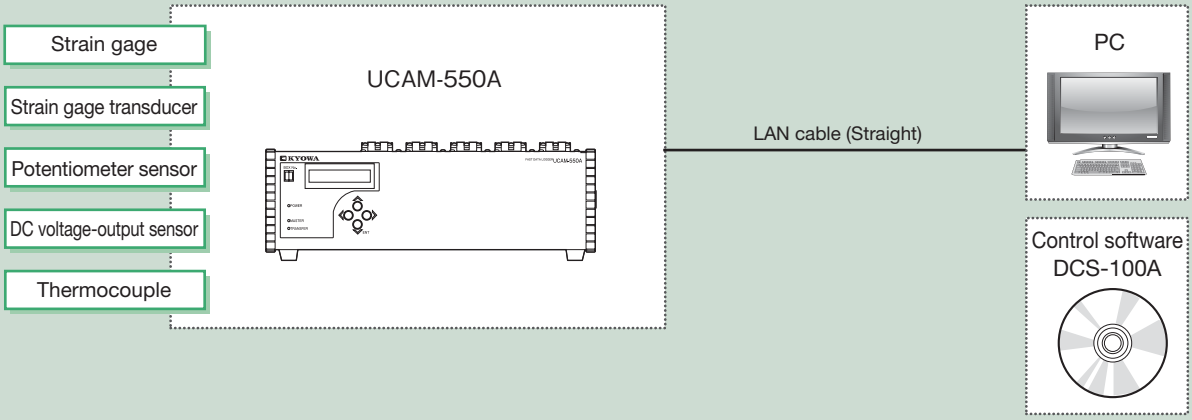
- Simultaneous measurement of various static variables including strain/stress, load, pressure, acceleration, displacement, torque, voltage and temperature
- Visual presentation of the progressive status of measurement and function that enables smooth progression of measurement while accepting the engineer's judgment.
- Unattended measurement
- More compact and lightweight design
- Capability to measure not only static phenomena but also events changing at a frequency of several Hz
- Efficient measurement and data collection through Internet or Ethernet LAN

Static Strain Data Loggers UCAM-60B, Universal Stand-Alone Type
UCAM-65B, Online Type

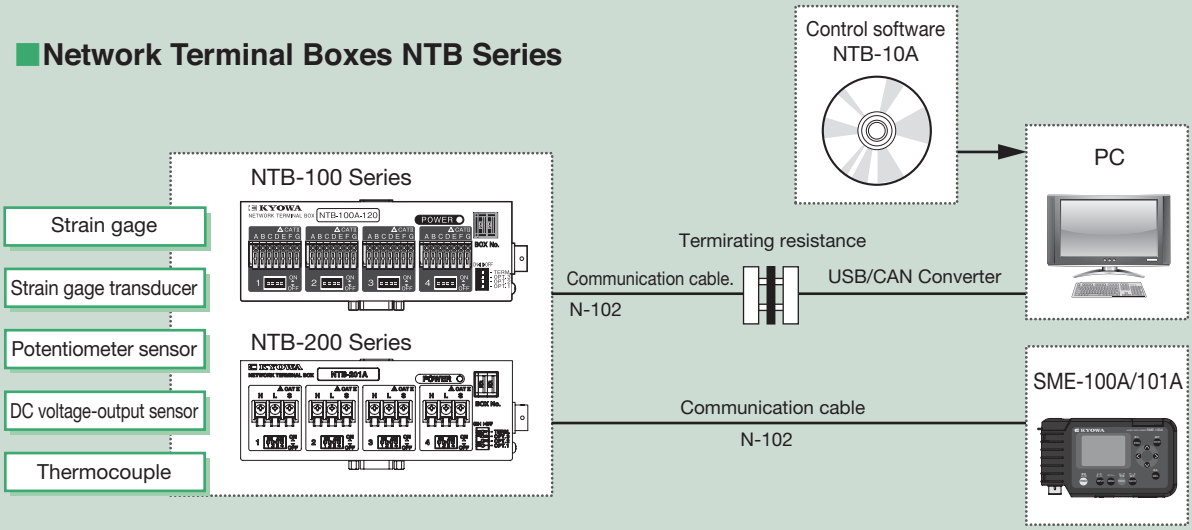


Note : For LAN connection, put a LAN hub between the UCAM-60B/65B and PC and use a straight cable.

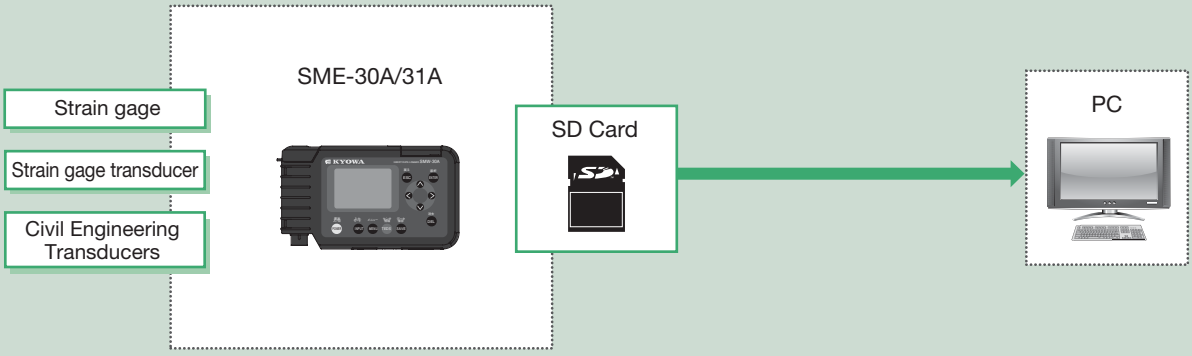
Fast Data Logger UCAM-550A for Online Static Strain Measurement



Network Terminal Boxes NTB Series



Portable data logger SME-30A/31A

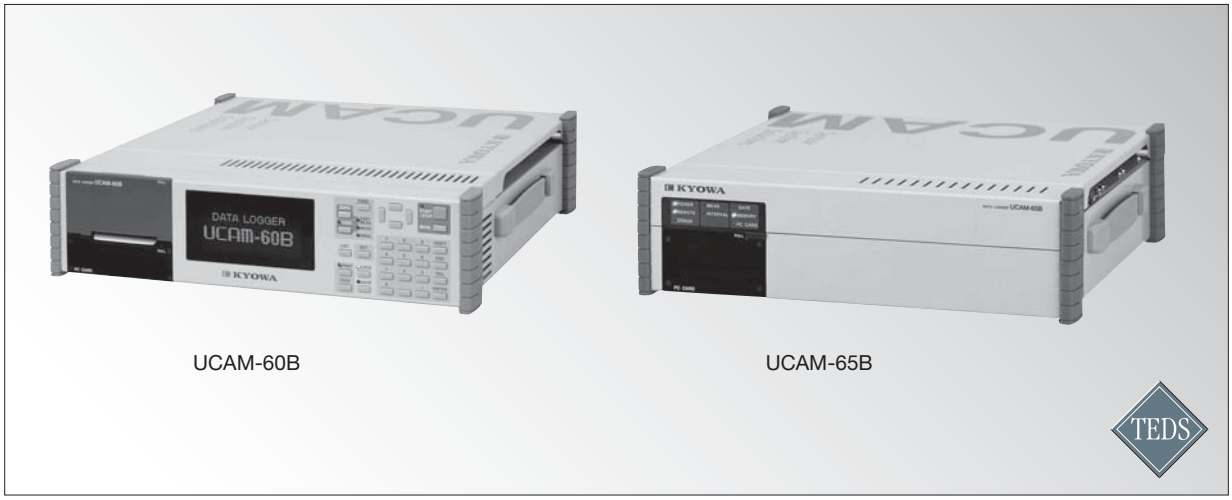


Data Logger Selection Chart

Model	Max Number of channels	Sacnning Speed (sec)									Applicable Sensor	PC Inter face	Power Supply	Ref Page
		0.001	0.02	0.05	0.28	0.5	1	2	5	10				
All-In-One Data Logger **UCAM-60B** PC-Controlled Data Logger **UCAM-65B**  Resolution as high as 0.1 μm/m	1000		●	●	●	●	●	●	●	●	Straingage Straingage transducer Civil engineering transducer (maybe equipped with temp meas function) Potentiometer sensor voltage output sensor Temperature (Ther mo-couple, platinum resistance temperature bulbs)	LAN RS-232C	AC85 to 264V or DC10 to 16V	3-26
Fast Data Logger NEW **UCAM-550A**  Simultaneous sampling of 100 channel at 50Hz	1000	Simultaneous measurement of all channels 1 time / sec for up to 1000 channels									Straingage Straingage transducer Potentiometer sensor voltage -output sensor Thermocouple	LAN	AC100 to 240V	3-35
Fast Data Logger **UCAM-500B**  Simultaneous sampling of 100 channel at 50Hz	1000	Simultaneous measurement of all channels 50 times /sec, to 100 channels and 1 time / sec for up to 1000 channels									Straingage Straingage transducer Potentiometer sensor voltage -output sensor Thermocouple	LAN	AC85 to 264V	3-32
Network Terminal Boxes NEW **NTB-100 Series** **NTB-201A**  NTB-100A-120  NTB-101A-350  NTB-201A The dispersion on location is possible by the compact size and wire one line connection. The field measurement is disitalized.	396					●	●				Straingage Straingage transducer Civil engineering transducer (maybe equipped with temperatwre meas function DC Voltage-output sensor DC current output sensor Thermocouple	Dedicated Interface	DC 11 to 16V	3-39
Portable Data Logger NEW **SME-30A/31A**  Easy to operate Portable data logger	1					●	●				Straingage Straingage transducer	SD card	AA size alkaline battery (2pieces) SME-31A is compatible with AC adabfer.	3-44

UCAM®-60B,65B

Data Loggers



UCAM-60B

UCAM-65B

Can measure up to 20000 μm/m with a resolution as high as 0.1 μm/m. (※When using for Full bridge system)

UCAM-60B

- ●Easy to understand English presentation
- ●Fluorescent display tube ensuring easy viewing in the field
- ●Built-in thermal printer for immediate confirmation of measured results

UCAM-65B

- ●Setting measuring conditions from PC and saving measured results to PC
- ●Interval measurement possible with no PC connected

Common to UCAM-60B and UCAM-65B

- ●Measurement up to 20,000 m/m with a resolution of 0.1 m/m (※When using for Full bridge system)
- ●Scanning at 50 ms/channel with internal scanners
- ●High-speed scanning at 20 ms/channel with internal scanners
- ●Up to 30 channel measurement with internal scanners
- ●Up to 1000 channel measurement with external scanners
- ●PC card slot ensuring easy data collection
- ●DC operated version for operation where no AC outlet is avalaible
- ●Can automatically set the gage mode for each channel by detecting the channel mode corresponding to the connected strain gage or strain gage transducer.
- ●TEDS compatible (with internal scanner USS-61B/62B/63B mounted; for TEDS, refer to page 8-21)
- ●Control software UCS-60B (optional for UCAM-60B) enables control through PC connected via Ethernet LAN or RS-232C. (When connecting via Ethernet LAN, use a straight cable and LAN hub.)

(Note 1) For TEDS, refer to P.9-15.
(Note 2) When connecting via Ethernet LAN use a straight cable and LAN hub

The data logger UCAM-60B is an all-in-one measuring instrument developed in full pursuit of easier field measurement. Easy to operate keys, a bright readable display providing understandable presentation and a printer for immediate confirmation of measurement results. All these and more are incorporated in this compact unit to satisfy every need in field measurement.
The UCAM-65B is a compact online data logger fully controlled through the PC.
Both models can connect to, and simultaneously input signals from, strain gages, strain gage transducers, civil engineering transducers with temperature measuring function, potentiometer sensors, thermocouples and DC voltage-output instruments. They are also compatible with TEDS-installed sensors having information conforming to IEEE template No. 33. While measurement in a maximum 30 channels is possible with the mainframe only, external scanners enable measurement in a maximum 1000 channels. Measured results are stored in internal memory. And for easy data transfer to PC, measured results can also be saved in a flash ATA card or CF card inserted into the PC card slot. Furthermore, Ethernet LAN and RS-232C interfaces are provided standard for connection to the PC, and the control software UCS-60B enables the PC to not only control the UCAM-60B/65B but also perform data processing for rosette analysis, etc. in the field by directly collecting data.

System Components

Data Logger (Main Unit)

Model	Power Supply	Control Software UCS-60B
UCAM-60B-AC	AC only	Optional
UCAM-60B-DC	DC only	Optional
UCAM-65B-AC	AC only	Standard
UCAM-65B-AC-0		Optional
UCAM-65B-DC	DC only	Standard
UCAM-65B-DC-0		Optional

Dedicated Scanners : USS-61B for general purpose
USS-62B for general purpose with NDIS connectors*1
USS-63B for civil engineering with lightning arrester
The main unit can accommodate up to 3 dedicated scanners.
External Scanners : The main unit can connect to the following scanners via the optional scanner interface.
USB-70 series via scanner interface USI-67A
Scanner Interfaces : USI-67A for USB-70 series
External Input/Output Unit : UIO-60A
Control Software : UCS-60B

*1. TEDS-compatible function is made effective by connecting TEDS-installed sensor through NDIS connector.

Specifications

■Data Loggers UCAM-60B/65B

Applicable Sensors :
Strain gages, strain gage transducers, civil engineering transducers with temperature measuring function, DC voltage-output or DC current-output instruments, potentiometer sensors, thermal sensors (thermocouples and platinum resistance thermometer bulbs)

Scanners and / Applicable Sensors			Dedicated Scanner	Dedicated Scanner: General purpose USB-70B-10/20	Dedicated Scanner: Civil engineering USB-70B-30
strain gages and strain gage transducers	Quarter bridge method	120Ω	●	●	●
		240Ω	●	●	●
		350Ω	●	●	●
	Quarter bridge method (true-dummy method)	120Ω	●	●	●
		240Ω	●	●	●
	Half bridge method 60 to 1000	Active-dummy method	●	●	●
		Active-active method	●	●	●
		Common dummy method		●	●
	Full bridge method 60 to 1000 *3	Opposite side active method	●	●	●
		Full-bridge method	●	●	●
Civil engineering transducers	Full bridge method 120	Constant-current excitation	●		
	Full bridge method 350	Constant-current excitation	●	●	●
		With temp. measuring function	●		●
Voltage	DC voltage-output instruments		●	●	●
Current	DC current-output instruments		●	●	●
Temperature	Thermocouples	K(CA)	●	●	●
		T(CC)	●	●	●
		E(CRC)	●	●	●
		J(IC)	●	●	●
		R	●	●	●
	Platinum resistance thermometer bulbs	Pt100 (new JIS)	●		●
		JPt100 (old JIS)	●		●
Potentiometer sensors			●	●	●
Built-in lightning arrester			● (*1)		●
Scanner interface *3			Not required	-67A	

*1. With USS-63B mounted.
*2. Use either of the scanner interfaces for
*3. 120 to 1000Ω in high-resolution mode.

Number of Measuring Channels :
Max. 30 with dedicated scanners
Max. 1000 with external scanners connected

Scanning Speed :
50 ms/channel (standard mode)
280 ms/channel (high-resolution mode), individually selectable for desired channels 20 ms/channel (high-speed mode), collectively selectable for all channels of dedicated scanners

Scanner \ Line Frequency	50 Hz Zone	60 Hz Zone
Dedicated scanner (standard mode)	50 ms/channel	
Dedicated scanner (high-resolution mode)	280 ms/channel	
Dedicated scanner (high-speed mode)	20 ms/channel	
USB-70 series (standard mode only)	60 ms/channel	58.4 ms/channel

Note : Scanning speeds stated above are standard maximum speeds in respective modes. Besides these, the following speeds can be set for each individual channel: 0.28 s, 0.5 s, 1 s, 2 s, 5 s and 10 s

Applicable Sensor \ Scanning Speed	Standard Mode (50 ms/channel)	High-Resolution Mode (280 ms/channel)	High-Speed Mode (20 ms/channel)
Strain (gage & transducer)	●	●	●
Voltage/current-output sensor	●	×	●
Civil engineering transducer	●	×	×
Temperature sensor (TC, Pt)	●	×	×
Potentiometer sensor	●	×	●

Notes : 1. High-resolution mode and high-speed mode are selectable for dedicated anners only.
2. High-resolution or high-speed mode is available only with 4-gage method.

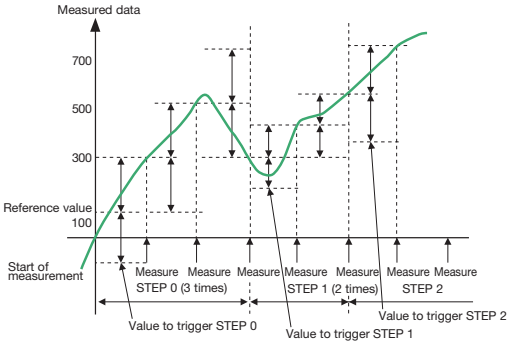
Operating Modes : Real-time, Monitor, and Automatic

Measurement Functions
Initial : Initial values are measured and stored in internal memory (except for temperatures measured by civil engineering transducers with temperature measuring function).
Original : Raw values are measured without subtraction of initial values.
Measure : Initial values are subtracted from original values (except for temperatures measured by civil engineering transducers with temperature measuring function).
Easy Measure : Auto zero balancing function is activated.
Note: The selected function is applied to all channels. Coefficient

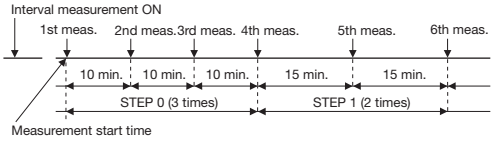
Calculation Function : Multiplication by calibration coefficients, calibration by TEDS, conversion of measured values to physical quantities, scaling and correction.

Engineering Units : 59 units

Automatic Measurement Functions
Trigger Measurement :
A relative value (certain changing quantity) or an absolute value triggers measurement. In addition to the usual trigger function, a variable trigger function is provided with which the trigger value changes at each step during measurement. With this special function, a trigger value and the number of measurement times (repeat times) under the trigger condition can be registered for each step to perform a series of automatic measurements in the order of steps.
The maximum number of steps available for setting is 15 and the number of repeat times may be a value selected from a range of 1 to 9999 or infinite.
Trigger channel : 1 desired channel
Trigger value : A desired real number of 6 effective figures or less Reference
Reference value : Amount of level shift to determine the first trigger value (selected from the same range as for the trigger values)
Number of repeat times : 1 to 9999 (0 for infinite times)
Number of measurement steps : Maximum 15



INTERVAL MEASUREMENT: Measurement is automatically performed at preset time intervals.
Starting time setting : Year/month/day and hour:minute:second
Interval setting : Days and hours:minutes:seconds (in a range of 00 and 00:00:01 to 99 and 12:59:59)
Number of repeat times : 1 to 9999 (0 for infinite times)
Maximum number of steps : 15



TRIGGER INTERVAL MEASUREMENT :
Combination of trigger measurement and interval measurement.
Trigger value: Absolute value Number of measurement times: Max. 9999
Interval time: Available in a range of
1 second to 99 days 23 hours:59 minutes:59 seconds
Storage Function : Internal memory, approx. 7 MB
Flash ATA card (optional); the capacity depends on the card.

●Strain Measurement (Standard Mode):

Bridge excitation
Constant voltage excitation : Approx. 2 or 5 VDC
Constant current excitation :
Approx. 5.7 mA (bridge resistance 350Ω)
(up to 5 km with a 4-conductor (0.5 mm²) shielded cable)
Approx. 16.7 mA (bridge resistance 120Ω)
(up to 2 km with a 4-conductor (0.5 mm²) shielded cable)
Scanning speed : 50 ms/channel
Gage factor : 2.00 fixed (coefficient calculation function enables correction with 2.00/Ks)
Initial value memory range : Same as measuring range
Measuring range, Resolution and Accuracy

Measuring Range	Resolution	Accuracy
0 to ±50000μm/m	1μm/m	±(0.05% of reading + 1) μm/m
±50000 to 500000μm/m	10 μm/m	±(0.05% of reading + 10)μm/m

●Strain Measurement (High-Resolution Mode):

Constant voltage excitation : Approx. 5 VDC
Constant current excitation : Approx. 16.7 mA (bridge resistance 350Ω)
(up to 2 km with a 4-conductor (0.5 mm²) shielded cable)
Scanning speed : 280 ms/channel
Gage factor : 2.00 fixed (coefficient calculation function enables correction with 2.00/Ks)
Initial value memory range : Same as measuring range
Measuring range, Resolution and Accuracy

Measuring Range	Resolution	Accuracy
0 to ±20000μm/m	0.1μm/m	±(0.05% of reading + 0.3) μm/m
±20000 to 200000μm/m	1μm/m	±(0.05% of reading + 3) μm/m

Notes : 1. Available only with 4-gage method (bridge resistance 120 to 1000Ω)
2. Bridge resistance should be 350Ω for bridge excitation with constant current.
3. Measuring range is 0 to 15000 μm/m for bridge excitation with constant current.
4. Available only with dedicated scanners.

●Strain Measurement (High-Speed Mode)

Bridge excitation
Constant voltage excitation: Approx. 2 VDC
Constant current excitation:
Approx. 5.7 mA (bridge resistance 350Ω)
(up to 5 km with a 4-conductor (0.5 mm²) shielded cable)
Approx. 16.7 mA (bridge resistance 120Ω)
(up to 2 km with a 4-conductor (0.5 mm²) shielded cable)
Scanning speed : 20 ms/channel
Gage factor : 2.00 fixed (coefficient calculation function enables correction with 2.00/Ks)
Initial value memory range : Same as measuring range
Measuring range, Resolution and Accuracy

Measuring Range	Resolution	Accuracy
0 to ±50000 μm/m	1 μm/m	±(0.08% of reading + 3) μm/m
±50000 to 500000μm/m	10μm/m	±(0.08% of reading + 30) μm/m

Notes : 1. Available only with 4-gage method
2. Available only with dedicated scanners.

●Voltage Measurement (Standard Mode)

Scanning speed : 50 ms/channel
Initial value memory range : Same as measuring range
Measuring range, Resolution and Accuracy

Range Mode	Measuring Range	Resolution	Accuracy	Input Resistance
V/500mV	0 to ±50.000 mV	1μ V	±(0.05% of reading + 3)	10 M Ω or more
	±50.00 to 500.00 mV	10 μV		
V/50V	0 to ±5.0000 V	100 μV	±(0.05% of reading + 2)	1 M Ω or more
	±5.000 to 50.000 mV	1 mV		

●Voltage Measurement (High-Speed Mode)

Scanning speed : 20 ms/channel
Initial value memory range : Same as measuring range
Measuring range, Resolution and Accuracy

Range Mode	Measuring Range	Resolution	Accuracy	Input Resistance
V/500mV	0 to ±50.000 mV	1μ V	±(0.08% of reading + 6)	10 M Ω or more
	±50.00 to 500.00 mV	10 μV		
V/50V	0 to ±5.0000 V	100 μV		1 M Ω or more
	±5.000 to 50.000 mV	1 mV		

●Current Measurement (Standard Mode)

Scanning speed : 50 ms/channel
Initial value memory range : Same as measuring range
Measuring range, Resolution and Accuracy

Channel Mode	Measuring Range	Resolution	Accuracy
I/50mA	0 to ±50.00mA	10μA	(±0.05% of reading + 0.01) mA

Notes : 1. External shunt resistor (high-accuracy 250Ω) is required.
2. Stated accuracy does not include the external shunt resistor.

●Current Measurement (High-Speed Mode)

Scanning speed : 20 ms/channel
Initial value memory range : Same as measuring range
Measuring range, Resolution and Accuracy

Channel Mode	Measuring Range	Resolution	Accuracy
I/50mA	0 to ±50.00 mA	10μA	±(0.08% of reading + 0.01) mA

Notes : 1. Available only with dedicated scanners.
2. External shunt resistor (high-accuracy 250Ω) is required.
3. Stated accuracy does not include the external shunt resistor accuracy.

●Temperature Measurement with Thermocouples (Standard Mode)

Scanning speed : 50 ms/channel
Measuring range, Resolution and Accuracy

Type	Measuring Range	Resolution	Accuracy	Internal Reference Junction Compensator Accuracy
K	-200.0 to 1230.0 ˚C	0.1˚C	±0.7˚C	±0.5 ˚C (with input terminal temperature balanced in an ambient) (temperature range of 0 to 50 ˚C)
T	-200.0 to 400.0 ˚C		±0.7˚C	
E	-200.0 to 660.0 ˚C		±0.5˚C	
J	-200.0 to 870.0 ˚C		±0.6˚C	
R	-0 to 1760.0 ˚C		±2.2˚C	

Notes : 1. Accuracies do not include the internal reference junction compensator accuracy.
2. The reference junction compensator is switchable between internal and external.
3. Thermocouple resistance should be 1 kΩor less.

●Temperature Measurement with Civil Engineering Transducers with Temperature Measuring Function (Standard Mode)

Scanning speed : 50 ms/channel
Measuring range, Resolution and Accuracy

Measuring Range	Resolution	Accuracy
-50.0 to 200.0˚C	0.1˚C	±0.5˚C

Notes : 1. Target physical quantity and temperature can be measured in a single channel.
2. Strain measuring ranges are the same as in strain measurement in standard mode.

●Temperature Measurement with Platinum Resistance Thermometer Bulb (Standard Mode)

Scanning speed : 50 ms/channel
Measuring range, Resolution and Accuracy

Type	Measuring Range	Resolution	Accuracy
Pt100	-200.0 to 660.0˚C	0.1˚C	±0.3˚C
JPt100	-200.0 to 510.0˚C		

Note : Connection is 3-wire system

●Measurement with Potentiometer Sensor

Scanning speed : 50 ms/channel (standard mode)
20 ms/channel (high-speed mode)
Initial value memory range : Same as measuring range
Sensor power supply : Approx. 2 VDC
Potentiometer resistance : 1 to 10 kΩ
Measuring range, Resolution and Accuracy

Channel Mode	Measuring Range	Resolution	Accuracy
POT.	0 to ±50.00%	0.01%	±0.1% FS

Note : Connection is 3-wire system

Clock (UCAM-60B) : Real-time clock is built in (battery backup 5 years).
Display (UCAM-60B) : Fluorescent display tube, 128 x 64 dots Printer (UCAM-60B)
Printing system : Thermal
Paper width : 58 mm (24 characters/line), UCAM-60A-RP
Printing speed : 60 mm/sec
PC Card Slot : Conforms with PCMCIA Ver. 4.2.
Accepts a commercially available flash ATA card or CF card (ATA card adapter required).
Interfaces : RS-232C and LAN (10BASE-T/100BASE-TX)
File Conversion : CSV conversion
Self-diagnosis Function :
Checks display, printer, bridge excitation, leadwire-off, input/output resistance, insulation resistance, mode, etc. Checking of input/outut resistance and mode is availabe only for dedicated scanners.
TEDS Compatibility :
Interface : IEEE 1451.4 Mixed Mode Transducer Interface Class 2
Applicable sensor : Should have information written in accord-ance with IEEE template No. 33; cable length should be 30 m or less.
Operating Temperature & Humidity Range :
0 to 50˚C, 20 to 85% RH (noncondensing)

Power Supply : AC85 to 264V, 50/60Hz (AC-operated version)
10 to 16 VDC (DC-operated version)
Note : DC-operated version has power control function.
Current Consumption:
0.5 A or less: 100 VAC (with 3 dedicated scanners mounted)
4 A or less: 12 VDC (with 3 dedicated scanners mounted)
Demensions :
UCAM-60B: 360(W) x 88(H) x 400(D) mm (excluding protrusions)
UCAM-65B: 327(W) x 88(H) x 365(D) mm (excluding protrusions)
Weight : UCAM-60B: Approx. 8 kg
UCAM-65B: Approx. 4.6 kg

Standard Accessories
AC power cable P-18 with conversion adapter CM-39 (AC-operated version) DC power cable P-57 (DC-operated version)
Recording paper UCAM-60A-RP (1 roll for UCAM-60B only)
Screwdriver, Spare fuse, Instruction Manual
CD-R (Control Software UCS-60B for UCAM-65B only)

Optional Accessories Recording Paper UCAM-60A-RP (10 rolls/pack)

■Dedicated Scanners USS-61B/62B/63B

Models : USS-61B (TEDS compatible)
USS-62B (with NDIS connectors, TEDS compatible)
USS-63B (for civil engineering measurement, TEDS compatible, with lightning arrester)
Number of Measuring Channels : 10/unit
Switching Terminals : Semiconductor relays
Input Terminals : Can connect to leadwires through either soldering or screwing.
NDIS connectors (USS-62B)
One-touch terminal block JT-1A (optional)
Lightning Arrester : Provided (USS-63B only)
Operating Temperature & Humidity Range :
0 to 50˚C, 20 to 85% RH (noncondensing)
Dimensions : 320(W) x 28(H) x 80(D) mm (excluding protrusions)
Weight : USS-61B : Approx. 800 g (including terminal cover)
USS-62B : Approx. 1 kg (including terminal cover)
USS-63B : Approx. 900 g (including terminal cover)

Standard Accessories
Terminal cover, Channel label and for USS-62B, NDIS connector caps (pre-attached to connectors)

■Scanner Interfaces USI-67A

Connectable Scanners : USB-70 series
Number of Connectable Scanners : Max. 20
Operating Temperature & Humidity Range :
0 to 50˚C, 20 to 85% RH (noncondensing)
Dimensions : 99(W) x 50(H) x 163(D) mm (excluding protrusions),
Weight : Approx. 160 g

USI-67A

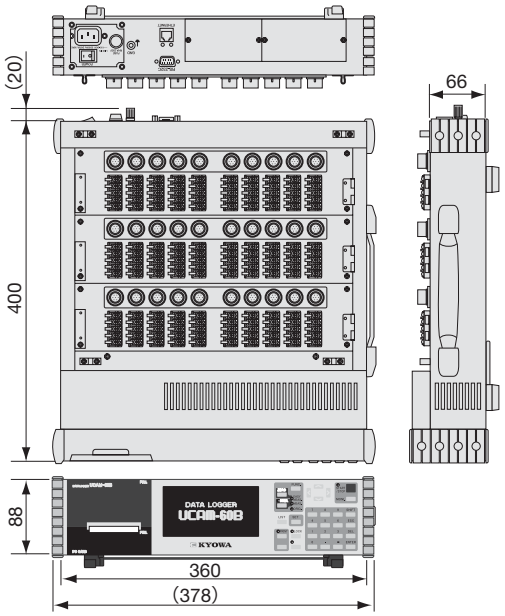
■External Input/Output Unit UIO-60A

Output : ALARM signal : 4 channels (high/low limit checking)
BUSY signal : 1 channel
Input : START signal : 1 channel
STOP signal : 1 channel
RESET signal : 1 channel
RAINFALL signal : 1 channel
Operating Temperature & Humidity Range :
0 to 50˚C, 20 to 85% RH (noncondensing)
Dimensions : 90(W) x 50(H) x 180(D) mm (excluding protrusions),
Weight : Approx. 140g

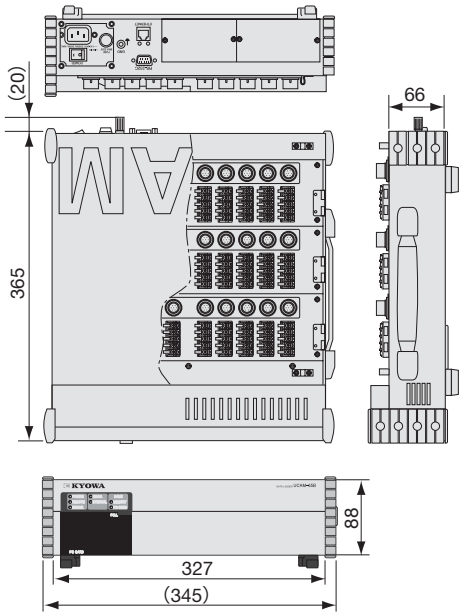
■External Scanners USB-70B

Models :
USB-70B-10 (for general strain measurement)
USB-70B-20 (for general strain meas., with NDIS connectors)
USB-70B-30 (for civil engineering, with lightning arrester)
Number of Measuring Channels : 50/unit
Measuring Channel Mode :
Selected for each channel from the mainframe
Connectable Sensors :
USB-70B-10 : Strain gages, strain gage transducers, potentiometer Sensors, DC voltage-output instruments, thermocouples
USB-70B-20 : Strain gages, strain gage transducers, potentiometer Sensors, DC voltage-output instruments, thermocouples (trans-ducers with NDIS connector can be connected)
USB-70B-30 : Strain gages, strain gage transducers, potentiometer Sensors, DC voltage-output instruments, thermal Sensors (thermo-couples, platinum resistance thermometer bulbs, civil engineering transducers with temperature measuring function); lightning arrester built in
Power Supply : Supplied from data logger If the cable is extended or if 4 or more scanners are connected, an optional UPS-70B should be mounted into scanners. UPS-70B operates on 90 to 132/180 to 264 VAC (no switchover required), 50/60 Hz
Operating Temperature & Humidity Range :
0 to 50˚C, 20 to 85% RH (noncondensing)
Dimensions : 302(W) x 107(H) x 500(D) mm (excluding protrusions)
Weight : Approx. 7.7 kg (USB-70B-30)
Approx. 8.5 kg (USB-70B-20)

■Dimensions



UCAM-60B
(With 3 units of USS-62B mounted)



UCAM-65B
(With 3 units of USS-62B mounted)

UCS-60B
Control Software

User friendly of control software for data logger.

- ●Can control UCAM-60A/B, UCAM-65A/B, UCAM-20PC and UCAM-500A/B.
- ●Numeric window presenting data in list format
- ●Up to 50 graph windows on display, maximum 20 channels of data per graph
- ●Various data saving formats: Kyowa standard KU1, UCAM-70A, CSV and XLS (Excel format)
- ●Data processing (arithmetic operation, statistic operation and rosette analysis)
- ●Read/write of measuring/calculating condition files
- ●Printer output

  When connecting the data logger to the PC via LAN port, use a straight cable and LAN hub.

The UCS-60B enables the PC to control a data logger and to present measured/calculated data on graph and numeric windows, thereby enhancing the performance of the data logger.

Specifications

●PC Requirements	
Processor :	Pentium Ⅲ 1 GHz or the equivalent
Memory :	512 MB or more
Hard Disk :	Blank space 20 MB or more
Display :	Resolution 1024 x 768 dots or more, 256 colors or more
OS :	Microsoft Windows 98/
	SE/Millennium/2000
	Professional/
	XP (32-bit)/
	Vista (32-bit)
Serial Port :	For RS-232C communication
LAN Port :	For Ethernet communication
GPIB Port :	For GPIB communication
●Measurement-Related Functions	
Controllable Data Loggers :	UCAM-60A/B, UCAM-65A/B, UCAM-20PC, UCAM-500A/B (UCS-60B is provided standard for UCAM-65A/B and UCAM-500A/B.)
Number of Channels :	2000 (within 2000 channels in total of measuring, temperature and calculating channels)
Measuring Condition Setting Functions :	
	System setting (setting of internal/ external scanners, etc.)
	Measuring channel range, measuring function and scanning speed depend on the applied data logger.
Measuring Channels :	000 to 999
Measuring Functions :	EASY MEAS., MEASURE VALUE, ORIGINAL VALUE, INITIAL VALUE
Repeat Times :	0 to 999 (0: Infinite)
Calibration Coefficient Calculation :	ON/OFF setting possible
Channel Conditions :	Type of scanner, measuring channel mode, calibration efficient, number of digits below decimal point, unit, ffset, temperature reference value, initial value, scanning speed, channel name (within 18 alphanumerics)
Interval Measurement Conditions :	Starting date/time, interval, number of measuring times (0 to 999; 0 = Infinite), number of steps (up to 99)
Trigger Measurement Conditions :	Trigger channels (desired 4 channels), reference values of trigger channels, AND/OR between trigger channels, trigger values, number of measuring times (0 to 999; 0 = infinite), number of steps (up to 99)
Trigger Interval Measurement Conditions :	
	Trigger channels (desired 4 channels), reference values of trigger channels, AND/OR between trigger channels, interval, number of measuring times (0 to 999; 0 = infinite), number of steps (up to 99)
	Reading/Saving Measuring Condition File Setting Channel Conditions from TEDS-installed Sensor
Automatic Reading of Channel Mode :	
	Possible for strain gages and strain gage transducers connected to internal scanners of UCAM-60A/B and UCAM-65A/B
Reading/Saving Calculation Condition File :	Possible
Measurement Functions :	
	Measurement check, initial value measurement, monitor measurement (max. 40 channels), real-time measurement, automatic measurement (interval, trigger, trigger interval), stroke change (single channel/measuring channel range)
	※ Monitor, trigger or trigger interval measurement can be used for setting calculation target channels.
Digital Indication of Measured Data :	
	Real-time measurement and automatic measurement results in a list, results of measurement check, initial value easurement and monitor measurement in the conventional format
	Number of numeric windows : Max. 1
	Number of monitor windows : Max. 1
Graphic Indication of Measured Data :	
	Types of Graph : Y-Time, Y-Cycle, X-Y, bar graph, 1 channel/ graph, 20 channels/graph
	Number of Display Channels : Max. 20 (max. 10 sets of channels with X-Y graph) Cursor indication, scale enlargement, auto scale, scale setting for each individual channel
	Number of Graph Windows : Max. 50 Number of measured data available on display depends on the number of channels as follows : 100 channels 10000 200 channels 5000 500 channels 2000 1000 channels 1000 1001 channels 500 (Maximum number of monitor measurement data available on display is 1000.)
Measured Data Saving Formats :	
	kyowa standard KU1.UCAM-70A, csv, xls (excel)
Print Function :	Numeric and graphic data can be printed out.
	The built-in printer of UCAM-60A/B can be set to ON or OFF.
Reading Information of TEDS-installed Sensor :	
	Possible for UCAM-60B/65B only
●Reproduction-Related Functions	
Number of Channels :	
	2000(within 2000 channels in total of measuring, temperature and calculating channels)

Reproducible File Formats :
KU1 and UCAM-70A (ASCII/binary compatible).
In addition to reproduction of data saved in these formats, the software enables coupling of files in the same format, cropping of a desired portion, and converting to CSV orXLS format.
Reading/Saving Calculation Conditon File : Possible
Numeric Indication of Measured Data : Numeric window where measured data is listed and can be edited as desired.
Number of numeric windows available on single screen : Max. 1
Graphic Indication of Measured Data :
Graph windowsTypes of Graph : Y-Time, Y-Cycle, X-Y
1 channel/graph, 20 channels/graph
Number of Display Channels : Max. 20 (max. 10 sets of channels with X-Y graph)
Cursor indication, scale enlargement, auto scale, scale setting for each individual channel
Number of Graph Windows available on single screen : Max. 50
Reading/Saving Display Condition File : Possible
Print Function : Numeric and graph windows can be printed out.

●Calculation-Related Functions

Number of Inputtable Characters in Expression : 100
Operators : +, -, ∗, /, (,), ^
Intrinsic Functions :

MAX	To obtain the maximum value among channels
MIN	To obtain the minimum value among channels
SUM	To obtain the sum of data in all channels
AVG	To obtain the average of data in all channels
STD	To obtain the standard deviation in all channels
DEV	To obtain the standard deviation in %
MAT	To obtain the maximum value in a channel
MIT	To obtain the minimum value in a channel
SUT	To obtain the sum of data in a channel
AVT	To obtain the average of data in a channel
STT	To obtain the standard deviation in a channel
PRE	To obtain the previous data in a channel Counting
CNT	To obtain the number of measuring times Rosette Analysis
HMX	To obtain the maximum principal strain
HMN	To obtain the minimum principal strain
HSM	To obtain the maximum shearing strain
SMX	To obtain the maximum principal stress
SMN	To obtain the minimum principal stress
SSM	To obtain the maximum shearing stress
DEG	To obtain principal strain direction Trigonometric Functions
SIN	Sine
COS	Cosine
TAN	Tangent
ASI	Arc sine
ACO	Arc cosine
ATA	Arc tangent

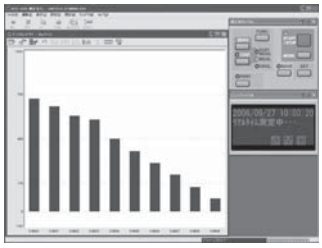
●Restrictions

To save measured data in the XLS format or to convert the measured data file into an XLS format file, the number of channels and the number of measured values are restricted as follows:
Number of channels : Max. 250
Number of measured values :Max. 10000
UCS-60B cannot read any measuring condition file, calculation condition file and display condition file compiled with UCS-25A.

Restrictions on UCAM-20PC
1) EASY MEASURE function cannot be used.
2) Number of monitor channels: Max. 20
3) No compatible with TEDS.

Restrictions on UCAM-500A/B
1) EASY MEASURE function cannot be used.
2) Number of monitor channels: Max. 50
3) Comparison graph display is not available.
4) Not compatible with TEDS.
5) No trigger interval measurement

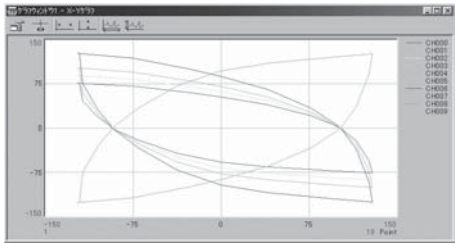
● Measured Data Monitor Windows



Bar Graph Window

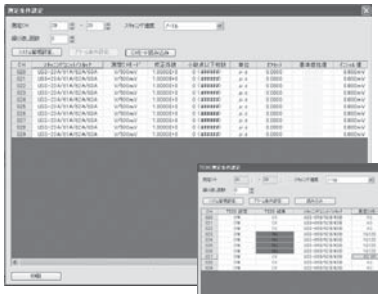
Numeric Window

● Data Reproduce Window

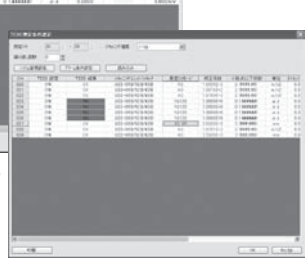


X-Y Graph

● Condition Setting Windows



Measuring Conditions



TEDS Information

System Management

Data Filing Conditions

UCAM®-500B

Fast Data Logger

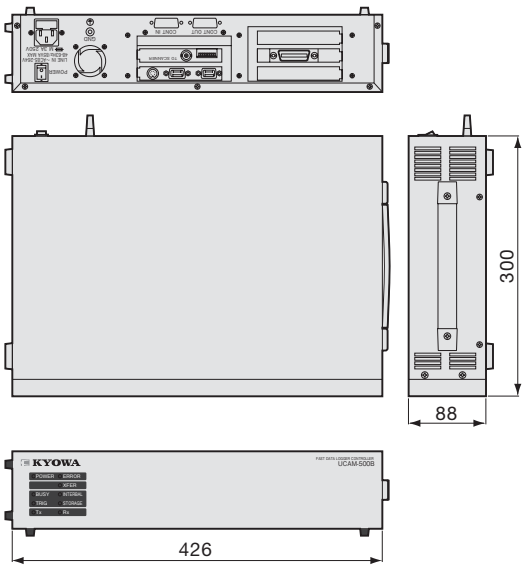
●Can Measure Quasi-Dynamic Phenomena

Maximum 1000 measuring channels. Flexibly coping with small to large scale measurement

- ●Simultaneous sampling of all channels, ensuring simultaneity of data
- ●Applicable for measurement of static to quasi-dynamic phenomena changing at several Hz
- ●High-speed semiconductor memory ensuring long-term data logging
- ●Intrinsic functions for data processing such as rosette analysis
- ●All operations from PC
- ●Compatible with varieties of sensors

Note : For LAN connecion, use a LAN hub and straight cable.

■Dimensions



The UCAM-500B is a fast data logger system which can simultaneously sample variables at multiple points at a maximum rate of 50 times per second.
The system is composed of fast data logger scanner(s) USB-500A, the fast data logger controller UCAM-500B which records measured data at high speed, and a PC in which the control software UCS-60B is installed for setting, controlling and data collection. The scanner and controller are black boxes having no operating switches and controls.
Scanning speeds include 1 time per second for 1000 channels and 50 times per second for 100 channels, making the system applicable for measurement of static to quasi-dynamic phenomena. In addition, the strain unit, voltage unit and temperature unit can be mounted to the scanner, enabling the system to connect to strain gages, strain gage transducers, potentiometer sensors, voltage-output instruments and thermocouples. The scanner provides a maximum 50 channels and the controller can connect to a maximum 20 scanners, enabling the system to measure variables at a maximum 1000 points.
Signals from sensors are digitized by A-D converters in the scanner, and then transferred to the controller via the dedicated interface. The controller stores the data in a built-in semiconductor memory and whenever commanded from the PC, the controller transfers the data to the PC. Since control commands of the controller are disclosed, users can create their original software to configure the optimum system for a specific measuring purpose.

Specifications

■Fast Data Logger Controller UCAM-500B

Number of Connectable Scanners (USB-500A) :
1 to 20 (maximum 1000 channels)

Functions : Receives data from scanner and stores it in memory. Transfers data to PC.

Measuring Modes : Real-time interval trigger monitor

Measurement Functions : initial, original, measure

Initial Value Memory Range : Same as measuring range of scanner

Conversion to Physical Quantities into Engineering Units :
Through multiplication of measured values (strain, voltage, potentiometer signals) by preset coefficients. (For details, refer to specifications of the control software.)

Memory : 64 MB (backed for approx. 4 years at 20˚C)
Measured data is stored in this semiconductor memory but parameters of calculation channels cannot be stored.

Maximm Number of Storing Times:

Number of Channels	Max. Number of Storing Times (Approx.)
50	120000
100	60000
200	30000
300	20000
400	15000
500	12000
600	10000
700	8500
800	7500
900	6500
1000	6000

Interfaces : Dedicated interface between controller and scanner
Total extensible length up to 185 m
LAN interface between controller and PC
(10BASE-T/100BASE-TX)

Real-time Clock : Year, month, day, hour, minute, second (used for interval measurement, etc.; backed for approx. 8 years at 20˚C)

Operating Temperature/Humidity Range : 0 to 40˚C, 20 to 85% RH (noncondensing)

Power Supply : AC85 to 264V, 50/60 Hz, approx. 50 VA

Dimensions : 426(W) x 88(H) x 300(D) mm (excluding protrusions)

Weight : Approx. 6 kg

Standard Accessories

Control software UCS-60B (CD-R)
AC power cable P-18 (with conversion adapter CM-33)
Synchronous cable US-50A 2 m long
T-type BNC connector, BNC terminator, Grounding conductor, Spare fuel (in fuse holder), Instruction manual

The following are optional dedicated accessories.

■Fast Data Logger Scanner USB-500A

Applicable Sensors and Measuring Units

Applicable Sensors \ Measuring Unit			Strain Unit USS-51A	Voltage Unit USV-51A	Thermocouple Unit UST-51A
Strain gage	1-gage method	120Ω	●		
		350Ω	●		
	1-gage method (true-dummy)	120Ω	●		
		350Ω	●		
Strain gage transducer	2-gage method 120 to 1000Ω	Active-dummy	●		
		Active-active	●		
	4-gage method 120 to 1000Ω	Opposite side active	●		
		Full-bridge	●		
Potentiometer sensor		1 to10kΩ	●		
Voltage-output sensor		±20.0V		●	
Thermocouple		K(CA)			●
		T(CC)			●
		E(CRC)			●
		J(IC)			●
		R			●

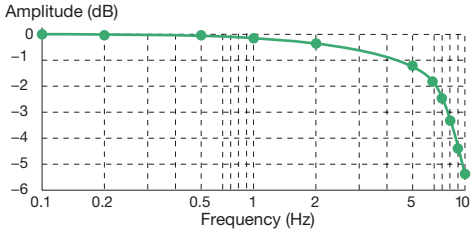
Number of Measuring Channels : 50
(with 5 measuring units mounted, 10 channels per unit)

Data Update :

Data Update	Number of Measuring Channels	Number of Scanners
1 time/sec	1 to 1000	1 to 20
2 times/sec	1 to 500	1 to 10
10 times/sec	1 to 200	1 to 4
20 times/sec	1 to 200	1 to 4
50 times/sec	1 to 100	1 to 2

To update data at 10 times/sec, 20 times/sec or 50 times/sec, scanners should be connected with each other using synchronous cable US-50A.

Frequency Response Range : DC to 7.8 Hz (deviation 0.5 dB/ 3.5 dB)



Interface : Dedicated interface between controller and scanner and between each scanner
Dedicated interface cable 2 m long (provided standard for each scanner), total extensible length up to 185 m

Operating Temperature/Humidity Range :
0 to 40˚C, 20 to 85% RH (noncondensing)

Power Supply : AC85 to 264V, 50/60 Hz, approx. 50 VA

Dimensions : 426(W) x 133(H) x 300(D) mm (excluding protrusions)

Weight : Approx. 6.5 kg (with 5 USS-51A strain units mounted)

Standard Accessories

AC power cable P-18 (1.8 m long with conversion adapter CM-33)
Dedicated interface cable 2 m long, T-type BNC connector,
Grounding conductor, Spare fuse (in fuse holder)

■Strain Unit USS-51A

Number of Measuring Channels : 10

Applicable Sensors : Strain gages, strain gage transducers, potentiometer sensors

Bridge Excitation : 2 VDC, constant voltage (regularly applied)

Potentiometer Supply : 2 VDC, constant voltge (regularly applied)

Gage Factor : 2.00 fixed (conversion to engineering unit function enables correction with 2.00/Ks)

Signal	Range Mode	Measuring Range	Resolution	Accuracy
Strain	L	0 to ±19000μm/m	1 μm/m	±0.05% FS
	H	0 to ±200000μm/m	10 μm/m	
Potentiometer Sensor		0 to ±50%	0.01%	±0.1% FS

With static (DC) signal input

Note : The stated measuring ranges are for INITIAL or ORIGINAL measurement mode. In MEASURE mode, the range is the result obtained by subtracting the pre-measured initial value from the original value.
●USS-51A M1 for transducers with NDIS connector
●USS-51A M6 with one-touch clamp style terminal board

■Voltage Unit USV-51A

Number of Measuring Channels : 10

Applicable Sensors : DC voltage, voltage-output sensor

Measuring Range	Resolution	Accuracy	Signal Source Resistance
0 to ±20.000 V	1 mV	±0.05% FS	50 Ω or less

With static (DC) signal input

■Thermocouple Unit UST-51A

Number of Measuring Channels : 10

Applicable Sensors : Thermocouples

Type	Range Mode	Measuring Range	Resolution	Accuracy
K	L	-200.0 to 437.0˚C	0.1˚C	±0.8˚C
	H	-200.0 to1200.0˚C	0.1˚C	±2.8˚C
T	—	-200.0 to 350.0˚C	0.1˚C	±0.7˚C
E	L	-200.0 to 260.0˚C	0.1˚C	±0.5˚C
	H	-200.0 to 800.0˚C	0.1˚C	±1.7˚C
J	L	0 to 330.0˚C	0.1˚C	±0.3˚C
	H	0 to 750.0˚C	0.1˚C	±1.9˚C
R	—	0 to 1600.0˚C	0.2˚C	±2.2˚C

With static (DC) signal input

Note: The stated accuracies do not include the internal reference junction accuracy. The internal reference junction compensator accuracy is ±0.5˚C (with input terminal temperature balanced at 25˚C ±10˚C).
Reference junction compensator is switchable between internal and external.
For thermocouple resistance 300Ω or less (K type), contact us.

■Terminal Cover UT-50A

This dustproof cover protects the input terminals of the measuring unit.
It is included in standard accessories to the thermocouple unit UST-51A.

■Rack-Mounting Brackets

JIS rack-mounting bracket UR-50A for UCAM-500B
EIA rack-mounting bracket UR-51A for UCAM-500B
JIS rack-mounting bracket UR-52A for USB-500A
EIA rack-mounting bracket UR-53A for USB-500A
Rack/drawer-mounting bracket UR-54A for USB-500A

■**Synchronous Cable US-50A**

Required for data update at 10 times per second or more with 2 to 4 scanners. One each synchronous cable is provided standard for each scanner. 1 synchronous cable is required to operate 3 scanners in synchronizaton, and 2 synchronous cables are required to operate 4 scanners in synchronization.

■**Connection Cables U-17 to U-20 (Refer to page 8-3.)**

■**Dummy Panel UD-50A**

To cover the portion of USB-500A to which no measuring unit is mounted.

■**Isolation Transformer UPT-300B**

Use this isolation transformer to obtain good measurement results where adverse power environment may cause noise, etc.

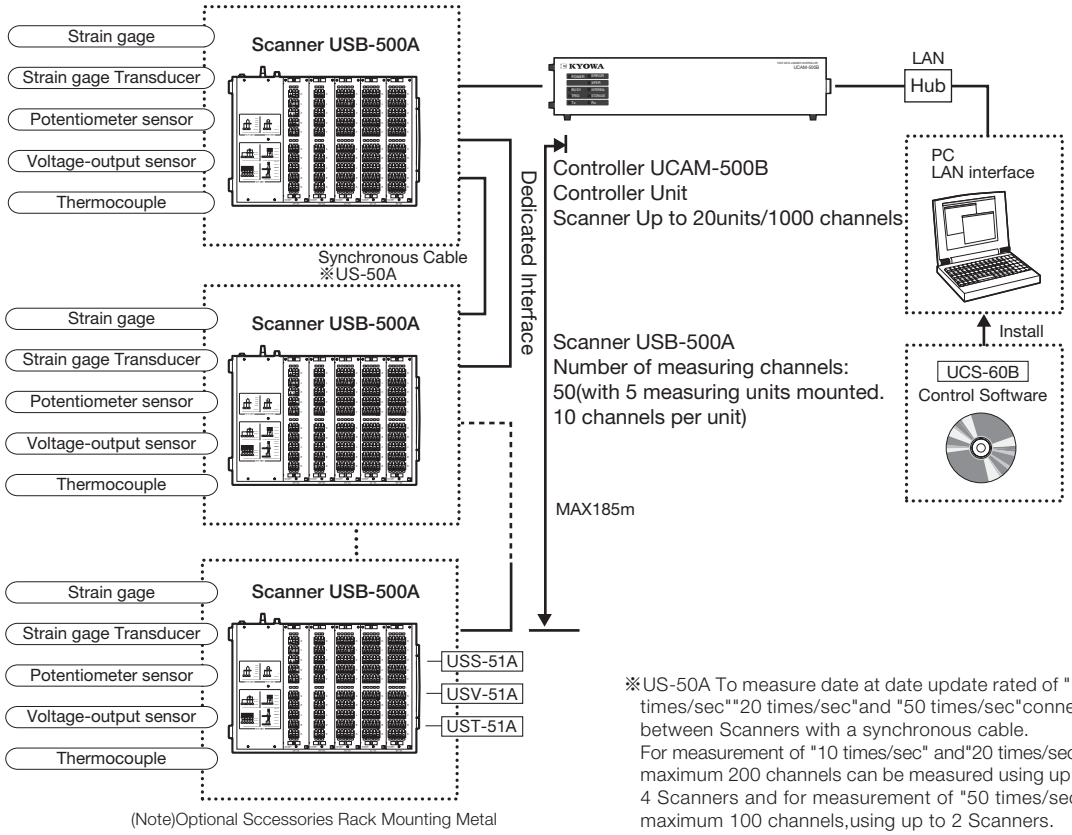
■**One-Touch Terminal Board JT-1A**

Mounted to the input terminal of the measuring unit, the JT-1A enables quick fitting of the input leadwire cable. It will be used for one each leadwire cable. (10 pieces per pack)

■**Control Software UCS-60B**

Standard accessory to the UCAM-500B. For details, refer to page 3-30.

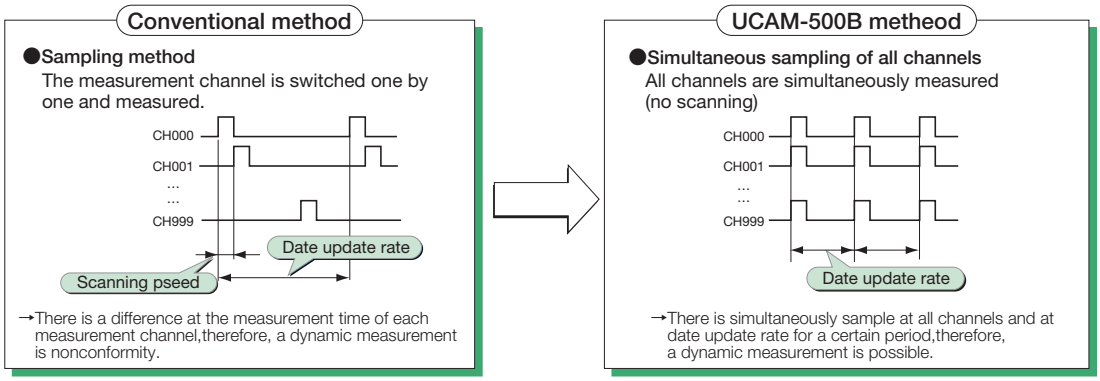
■System Configurations



※US-50A To measure date at date update rated of "10 times/sec""20 times/sec"and "50 times/sec"connect between Scanners with a synchronous cable.
For measurement of "10 times/sec" and"20 times/sec", maximum 200 channels can be measured using up to 4 Scanners and for measurement of "50 times/sec" maximum 100 channels,using up to 2 Scanners.

(Note)Optional Sccessories Rack Mounting Metal

■All channels simultaneously sampling



UCAM®-550A

Fast Data Logger

●Can Measure Quasi-Dynamic Phenomena

UCAM-550A

PC is not included.

Sampling all channels simultaneously (up to 1000 channels) At a sampling frequency of 50Hz

●All-channel simultaneous sampling
●Continuous/simultaneous measurement of 1000 channels at the maximum of 50 times/seconds.
●It can synchronize in 20 sets units by a LAN cable.
●Dynamic data acquisitition software Control by DCS-100A (Optional)
●Three types of measuring units are included.

UCAM-550A is a high-speed logger system which can measure 1000 channels (at maximum) repeatedly at a sampling frequency, and consists of the following:

●Fast data logger UCAM-550A which records the measured data at high-speed
●The PC performing the operation such as setting/controlling/data recording (Prepare it separately.)
●Dynamic data acquisition software DCS-100A (Optional)

Since this instrument can measure simultaneously at high-speed, only this system can correspond to a wide variety of phenomena measurement; from the static phenomena to the pseudodynamic phenomena.

The measuring unit to be mounted has prepared the following three types:

●Strain unit USS-51B (Corresponds to Potentiometer type sensor)
●Voltage unit USV-51B
●Thermocouple unit UST-51B

Because the system corresponds to the strain gage, the strain gage transducers, the voltage output type sensor, the potentiometer type sensor, and thermocouples, it can measure/record voltage and temperature including strain, stress, load, pressure, displacement.

Since the measuring channel number can connect in cascade at maximum 50 channels in one unit and up to 20 units, measurement of 1000 channels at maximum is possible, enabling measurements from small to large-scale.

Specifications

■UCAM-550A

Model : UCAM-550A with DCS-100A
UCAM-550-0 without DCS-100A

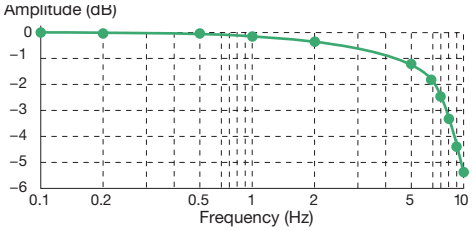
Measuring object and measuring unit :

Measuring object		Unit	Strain Unit USS-51A/B	Voltage Unit USV-51A/B	Thermocouple Unit UST-51A/B
Strain gage	1gage methods	120Ω	●		
		350Ω	●		
Strain gage transducer	2gage methods 120 to 1000Ω	Active dummy methods	●		
		Active active methods	●		
	4gage methods 120 to 1000Ω	Opposite side active methods	●		
		Bridge methods	●		
Potentiometer type sensor		1 to 10kΩ	●		
Voltage		±20V		●	
Temperature	Thermocouple	K(CA)			●
		T(CC)			●
		E(CRC)			●
		J(IC)			●
		R			●

∗USS-51A, USV-51A, UST-51A can be also used.
However, the notation of channel number differs.

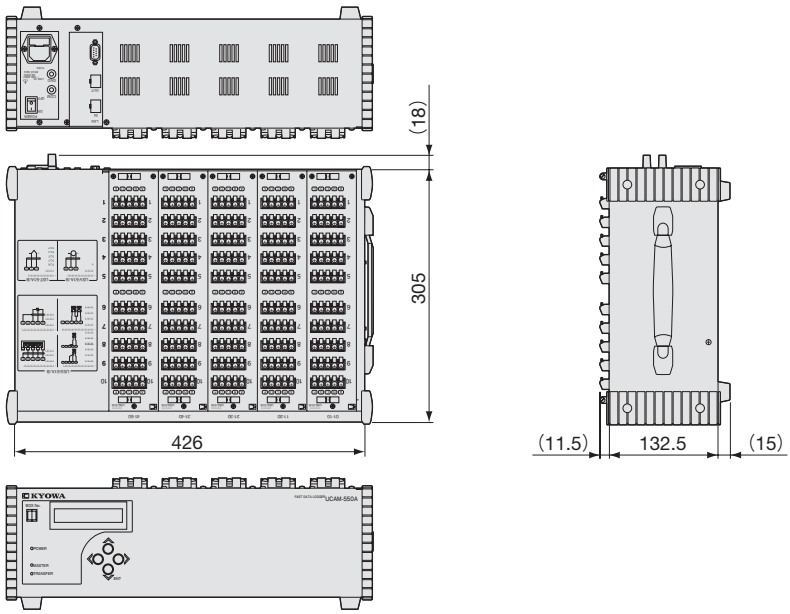
Number of measuring channels :
Maximum of 50 channels/unit (Mixed palletizing is possible up to 5 units of the measuring unit)
(Each measuring unit can measure 10 channels per one unit.)
Measurement is possible up to 1000 channels at maximum using the multi-unit synchronous operation.
∗The public command corresponds up to 20 units (Maximum 1000 channels).
∗DCS-100A corresponds up to 6 units (Maximum 300 channels).

Sampling frequency : 1, 2, 10, 20, 50Hz
∗Response frequency depends on the measuring unit.
USS-51A/B, USV-51A/B, UST-51A/B : DC～7.8Hz
(Deflection : 0.5dB to –3.5dB)



Measuring function : Original measurement
Major measurement
Interface : 10 BASE-T, 100BASE-TX
Between PC-UCAM
LAN Cable (Straight) Maximum 100m
Between UCAM-UCAM
STP Straight Cable (Refer to notes)
Maximum 100m
Note: “STP” of STP cable is abbreviated for Shield Twisted Pair, and the STP cable is a LAN cable with a shield.
Display : LED (20 digits x 2 lines)
LED status display : (In power on, green light-up)
MASTER (While in master, a green lamp lights up, while in sleeve, the light goes out)
TRANSFER (In communicating, the green lamp blinks)
Operation key : Right/left or up/ down keys
Data storage : Measured data is stored on the PC (No internal storage)
Temperature and humidity range for use :
Temperature : 0 to 40˚C
Humidity : 20 to 85%RH (No condensation)
Power supply : Approximately 50VA
(Implement 5 USS-51A/B strain units when connecting to all channels at 120Ω load)
Outside dimension : 426(W)×132.5(H)×305(D)
Projection not included
Mass Approximately : 7kg (When implementing the 5 USS-51B strain units)

■Dimensions



Special-purpose optional goods

■Measuring unit Strain unit USS-51B

Number measuring channels : 10

Applicable sensors measuring object :

Strain gage, strain gage transducers

Potentiometer type sensor

Bridge excitation : 2 VDC constant voltage (reguiarly applied)

Potentiometer drive power supply : 2 VDC constant voltage (Applied constuntly)

Gauge factor : 2.00 fixed (Correction is possible at 2.00/Ks with the engineering value conversion function)

Measuring range, resolution, accuracy (In static (DC) inputting) :

Signal	Range Mode	Measuring Range	Resolution	Accuracy
Strain	L	0 to ±19000μm/m	1 μm/m	±0.05% FS
	H	0 to ±200000μm/m	10 μm/m	
Potentiometer Sensor		0 to ±50%	0.01%	±0.1% FS

Note : Measuring range is indicated when the initial measurement and the original measurement are performed. In the case of a major measurement, the value is of the initial measurement value deducted in advance from the original measurement value.

Option Input section protection/terminal cover for protection from dust UT-50A

■Voltage unit USV-51B

Number measuring channels : 10

Measuring target : DC voltage, voltage output type sensor

Measuring range, resolution, accuracy (In static (DC) inputting) :

Measuring Range	Resolution	Accuracy	Signal Source Resistance
0 to ±20.000 V	1 mV	±0.05% FS	50 Ω or less

Option Input section protection/terminal cover for protection from dust UT-50A

■Thermocouple unit UST-51B

Number measuring channels : 10

Measuring target : Temperature (Thermocouple)

Measuring range, resolution, accuracy (In static (DC) inputting) :

Type	Range Mode	Measuring Range	Resolution	Accuracy
K	L	-200.0 to 437.0°C	0.1°C	±0.8°C
	H	-200.0 to1200.0°C	0.1°C	±2.8°C
T	—	-200.0 to 350.0°C	0.1°C	±0.7°C
E	L	-200.0 to 260.0°C	0.1°C	±0.5°C
	H	-200.0 to 800.0°C	0.1°C	±1.7°C
J	L	0 to 330.0°C	0.1°C	±0.3°C
	H	0 to 750.0°C	0.1°C	±1.9°C
R	—	0 to 1600.0°C	0.2°C	±2.2°C

Note : Measuring range is indicated when the initial measurement and the original measurement are performed. In the case of a major measurement, the value is of the initial measurement value deducted in advance from the original measurement value.

Standard Accessories Input section protection/terminal cover for protection from dust UT-50A

General purpose optional goods

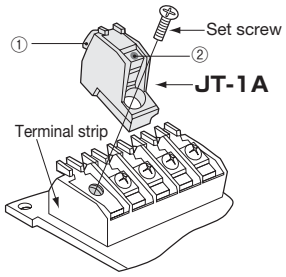
■Insulation transformer UPT-300B

Use it in order to obtain good measurement results at a site where such cases as unreliable power supply or when much noise is expected.

■One-touch terminal block JT-1A

This is a terminal block capable of connecting the input lead wire with one-touch, and can be mounted on the input terminal. Use 1 unit per 1 lead wire. (Sale of units in 10 pieces) Upon mounting this terminal block, the terminal cover can not be used. When performing the internal standard contact compensation with a thermocouple, an error occurs.

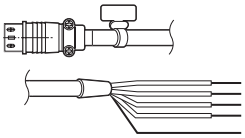
While pressing ① with a small tip of something like a ballpoint pen, insert the lead wire to ②.



■Connection cable U-17 to 20

This is a cable to connect the strain gauge type converter with NDIS standard connector plug to the input terminal of the measuring unit.

Length : U-17 50cm
U-18 1m
U-19 2m
U-20 5m

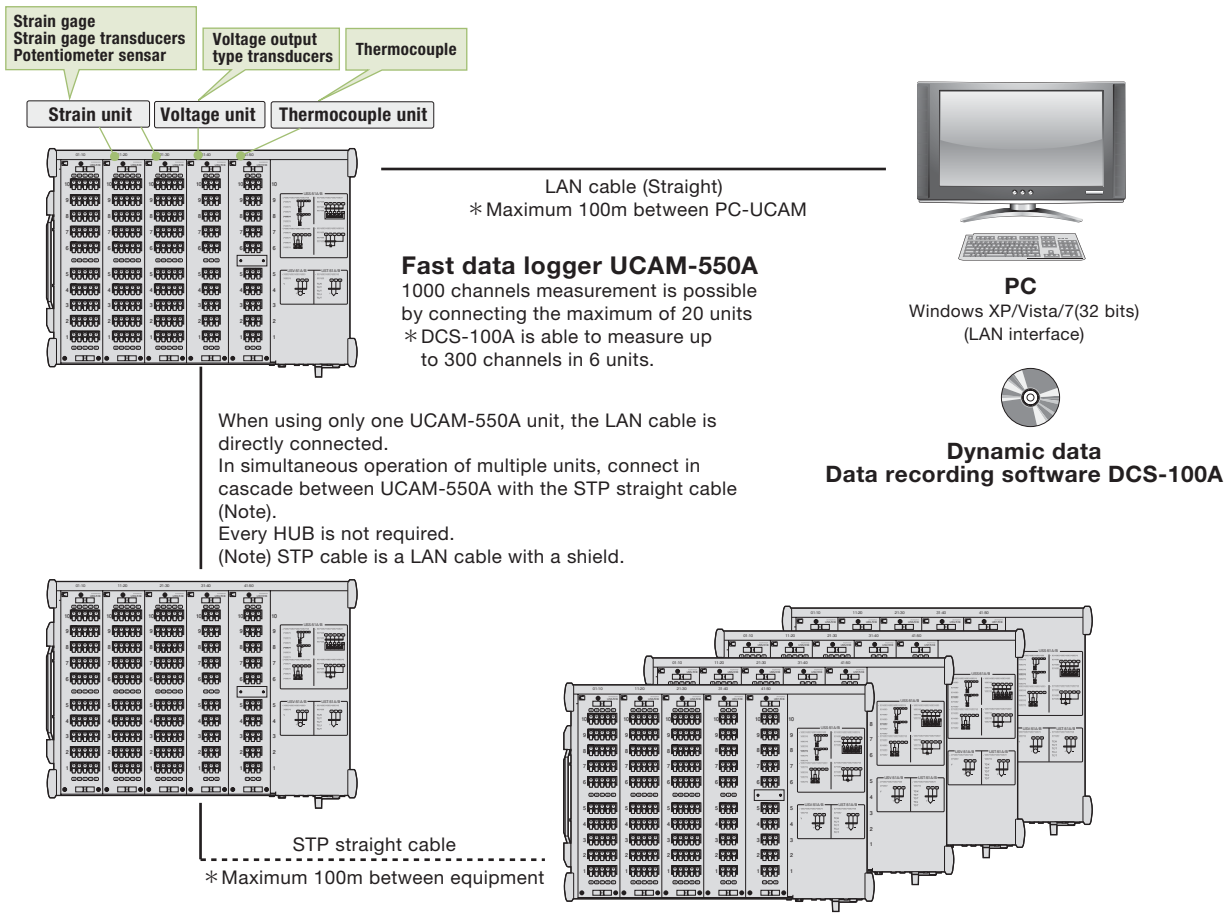


DCS-100A UCAM-550A control specification

Connection unit number : Maximum of 6 units (Maximum 300CH)	
Data recording : The measured data is stored to the PC hard disk as a KS2 file.	
Sampling frequency : 1, 2, 10, 20, 50Hz	
Measuring mode : Manual, Manual (Recorded data number is designated), Interval, analog trigger	
Measuring function : Major, original	
Major : Measured value = Sensor output value - Initial value	
Origina l: Measured value = Sensor output value	
Calibration factor computation : ON/OFF setting in all CHs of one batch	
Calibration factor computation : Measured value X Calibration factor + Offset	
CH conditions : Measurement, measuring CH mode, range, calibration factor, offset, unit, initial value, CH name, number of decimal places rated capacity, rated output (Optional selection for display items is possible)	
Initial value measurement : Measure the initial value of each sensor.	
Manual measurement : Perform data recording up to the designated data number from REC, or between REC and STOP.	
Interval measurement : Perform automatic data recording by setting the data acquisition starting time and for the data recording interval.	
Analog trigger measurement : Perform the start/stop of the data recording by the set trigger conditions. (Trigger standard value is the fixed absolute value trigger)	
End trigger :	Settable
Delay amount :	Maximum 3000 data/CH together with start/stop
Trigger CH :	Arbitrary 1CH
Trigger level :	Set by the engineering value
Trigger slope :	Startup/shutdown

Turning function	
Setting/read-in for parameter : Read-in and settings for the internal parameter of UCAM-550A are possible.	
Environmental setting	
Hardware configuration setting :	
Connection unit number, equipment name, setting for IP address	
Read-in of the measuring unit configuration from UCAM-550A is possible.	
Communication checks : Perform the UCAM-550A version read-in.	
■Operation environment	
OS :	Windows XP, Windows Vista, Windows 7 (64 bits version Japanese/English) (32 bits in the case of Windows XP it corres ponds)
CPU :	Pentium 4 2GHz equivalent or more In the case of Windows XP, PentiumⅢ 1GHz equivalent or more
Memory :	2G bytes or more In the case of Windows XP, 512M bytes or more
Display :	Resolution: 1024×768 or more Display color: (16 bits or more)
HDD :	When installing, 20M bytes + measured data storage
Interface :	100Base-TX

■System Configurations



NTB Series

Network Terminal Boxes

A revolutionary concept of measurement has emerged

- The wide area, decentralized arrangement will be useful for the infrastructure of building and civil engineering.
- Network output is compliant to CAN, requiring a single wire to build the network.
- Measurement can be started immediately when the instrument is connected to a computer.
- Various ways of interlocking and connection are provided, broadening system applications.
- Compact, lightweight and affordable, allowing a small-sized system to be built on site easily.
- Digitizing data adjacent to the sensor allows noise resistant digital data to be transmitted.

Signals from a sensor are usually digitized through an amplifier and A/D converter via a bridge box, and the digital data is processed on a computer or a dedicated system.
NTB-100A Series network terminal boxes revolutionize this process signals from a sensor are immediately digitized and fed to a computer for data processing.
These NTBs not only streamline signal processing, but also contributes to eliminating extra cable thereby reducing cost of labor and installation.
By placing an NTB near a sensor, only a single communication cable is required to build a wide area network (a total distance of 1 km), which is also useful because the digital transmission is hardly affected by noise.
A single unit can measure 4 channels, and up to 8 units can be connected, for measurement of a maximum of 32 channels is possible.
The NTB, which directly connects various sensors including strain gages, facilitates digital measurement in the field such as construction or building site, or for indoor experiments and researches.
Handy logger SME-100A allows a wider range of measurement with its.

Specifications

Network data collector models

Model	Bridge excitation	Sensor input terminal	1-gage resistance
NTB-100A-120	Constant-voltage	One-touch lock terminal	120Ω
NTB-101A-120	Constant-voltage	Screw soldering terminal	120Ω
NTB-100A-350	Constant-voltage	One-touch lock terminal	350Ω
NTB-101A-350	Constant-voltage	Screw soldering terminal	350Ω
NTB-110A-350	Constant-voltage	One-touch lock terminal	For 4-gage only
NTB-111A-350	Constant-voltage	Screw soldering terminal	For 4-gage only

※Control Software NTB-10A Standard accessory.

Measuring network data collector object

Bridge excitation	Applicable sensor			NTB model		
				General-purpose strain measurement		Civil engineering measurement
				NTB-100A-120 NTB-101A-120	NTB-100A-350 NTB-101A-350	NTB-110A-350 NTB-111A-350
NTB models and applicable sensors	Strain gage	Quarter gage method	120Ω	●	×	×
			350Ω	×	●	×
	Strain gage transducer	Half bridge method 120 to 1000Ω	Active-active method	●	●	×
		Full bridge method 120 to 1000Ω	Full bridge	●	●	×
Constant current	Civil engineering transducer	4-gage method 350Ω	Full bridge method Civil engineering transducer with temperature	×	×	●
				×	×	●

channels :	4
Scanning speed :	Approx. 0.5 sec/channel for 0 to ± 30000 μm/m
	Approx. 1 sec/channel for ± 30000 μm/m or more With civil engineering transducer with temperature measuring function
Bridge excitation :	Approx. 2VDC for constant-voltage bridge excitation
	Approx. 5.6mA for constant-current bridge excitation (at bridge resistance 350Ω)
Measuring range :	Strain measurement
	0 to ± 300000 μm/m (constant-voltage bridge excitation)
	0 to ± 30000 μm/m (constant-current bridge excitation)
	Temperature measurement with civil engineering transducer with temperature measuring function -30.0 to 70.0˚C
Resolution :	Strain measurement
	0 to ± 30000 μm/m : 1 μm/m
	± 30000 to ± 300000 μm/m : 10 μm/m
	Temperature measurement with civil engineering transducer with temperature measuring function 0.1˚C
Accuracy :	Strain measurement
	0 to ± 30000 μm/m : ± (0.05% rdg. + 2) μm/m
	± 30000 to ± 300000 μm/m : ± (0.1% rdg. + 20) μm/m
	Temperature measurement with civil engineering transducer with temperature measuring function ± 0.5˚C
TEDS :	Read from TEDS sensors
	Operator input of channel names (Kyowa ID only)
Power save mode :	Provided ON/OFF using “OPT.3” DIP switch.
Interface :	Dedicated interface conforming to CAN, cable extension up to 1km
Operating temperature range :	-10 to 50˚C
Operating humidity range :	20 to 85%RH (no condensation)
Power supply :	11 to 16VDC
Current consumption :	(during operation at 12VDC) Constant-voltage bridge excitation
Operation :	100mA or less Standby : 60mA or less
Standby (in power save mode) :	40mA or less
Constant-current bridge excitation Operation :	70mA or less
Standby :	60mA or less Standby (in power save mode) : 40mA or less
Dimensions:	One-touch lock type: 150 (W) × 28 (H) × 55 (D) mm (excluding protrusions)
Screw soldering type :	150 (W) × 28 (H) × 110 (D) mm (excluding protrusions)
Weight :	One-touch lock type : Approx. 310g
	Screw soldering type : Approx. 650g

Standard Accessories
Operation Manual (CD-R), P-57(DC power cable), P-72(ground wire), Wire connection seals
Bumpon (rubber feet), Screwdriver (for one-touch lock type only)
Terminal block (for screw soldering type only)

Optional Accessories

USB-CAN converter	LEAFLIGHT HS
Terminating resistance	CANTERM120
AC adaptor	SA-10A-EDS
Connection board//clip	CN-1A
DIN rail mounting plate	
Y cable	N-103
Communication cable 1m	N-102
Communication cable 3m	H-11681
Communication cable 5m	H-11682
Communication cable 10m	H-11683

※(NOTE) Please contact our sales department for communication cables other than those listed above.

Temperature Measurement Unit
NTB-201A

NEW

- ●Enables composite measurement to voltage sensor and thermocouple
- ●Enables composition to NTB-100A series
- ●The wide area, decentralized arrangement will be useful for the infrastructure of building and civil engineering.
- ●Network output is compliant to CAN, requiring a single wire to build the network.
- ●Measurement can be started immediately when the instrument is connected to a computer.
- ●Various ways of interlocking and connection are provided, broadening system applications.
- ●Compact, lightweight and affordable, allowing a small-sized system to be built on site easily.
- ●Digitizing data adjacent to the sensor allows noise resistant digital data to be transmitted.

Operating Environment

OS :	Windows XP, Vista, Windows 7
	(32-bit Japanese/English Edition)
CPU :	Pentium4, : 2 GHz or higher
Memory :	1GB or more (2GB or more for Windows Vista)
Display :	Resolution : 1024×768 dots or more
	Color : Full Color or more
USB-CAN Converter :	Model LEAFLIGHT HS
Terminating resistance CANterm :	120 Ω

Specifications

●**Network Data Collector**

Number of measuring channel : 4

Scanning speed : Approx. 0.5 sec/channel

Applicable sensors : DC voltage-output, Thermocouple

Voltage-output measurement :

Range	Measuring range	Resolution	Accuracy	Signal Source Resistance
10V	0 to ±10.0000V	100 μ V	±(0.1% rdg+0.0003V)	Approx. 1M Ω
50V	0 to ±50.000V	1mV	±(0.1% rdg+0.003V)	Approx. 1M Ω

Thermocouple :

Type	Measuring range	Resolution	Accuracy		The internal reference junction accuracy
K	-200.0 to +1230.0°C	0.1°C	-200.0 to -100°C or less	±(0.2% rdg+0. 3°C)	±0.5°C (with input terminal temperature balanced in an ambient temperature range of 0 to 50°C)
			-100.0 to +1230.0°C	±(0.1% rdg+0. 2°C)	
T	-200.0 to +400.0°C		-200.0 to -100°C or less	±(0.2% rdg+0. 3°C)	
			-100.0 to +400.0°C	±(0.1% rdg+0. 2°C)	
E	-200.0 to +660.0°C		-200.0 to -100°C or less	±(0.2% rdg+0. 3°C)	
			-100.0 to +660.0°C	±(0.1% rdg+0. 2°C)	
J	-200.0 to +870.0°C		-200.0 to -100°C or less	±(0.2% rdg+0. 3°C)	±1.0°C (with input terminal temperature balanced in an ambient temperature range of -10 to 0°C or less)
			-100.0 to +870.0°C	±(0.1% rdg+0. 2°C)	
R	-200.0 to +1760.0°C		0.0 to +100°C or less	±(0.2% rdg+0. 8°C)	
			+100.0 to +1760.0°C	±(0.125% rdg+0. 6°C)	
N	-200.0 to +1300.0°C		-200.0 to -100°C or less	±(0.2% rdg+0. 3°C)	
			-100.0 to +1300.0°C	±(0.1% rdg+0. 2°C)	

(NOTES)
1 . Accuracies do not include the internal reference junction compensator accuracy
2. The reference junction compensator is switchable between internal and external
3. The thermocouple resistance should be 1kΩ or less

Check function :	Burnout check.
Power save mode :	Provided ON/OFF using “OPT.3” DIP switch.
Interface :	Dedicated interface conforming to CAN,
Operating temperature range :	-10 to 50°C
Operating humidity range :	20 to 85%RH (no condensation)
Power supply :	11 to 16VDC
Current consumption :	
	(during operation at 12VDC) Constant-voltage
	bridge excitation Operation : 100mA or less
	Standby : 60mA or less
	Standby (in power save mode) : 40mA or less
	Constant-current bridge excitation
	Operation : 70mA or less
	Standby : 60mA or less
	Standby (in power save mode) : 40mA or less
Dimensions :	
One-touch lock type :	150 (W)×28 (H) × 55 (D) mm (excluding protrusions)
Screw soldering type :	150 (W)×28 (H) × 110(D) mm (excluding protrusions)
Weight :	Approx. 320g

(NOTE) TEDS function is unusable.

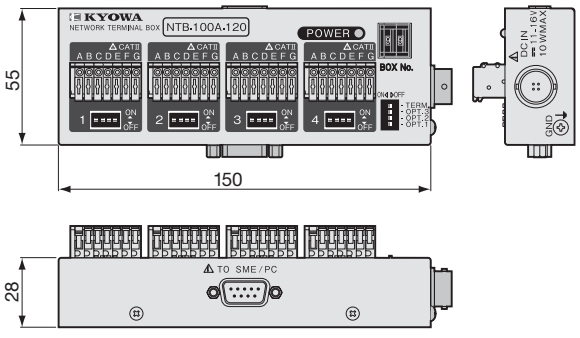
●NTB-10A is remote control software for Network Terminal Box by PC.
Enables display for graphic and numeric on PC.

●Network Terminal Box Control Software NTB-10A

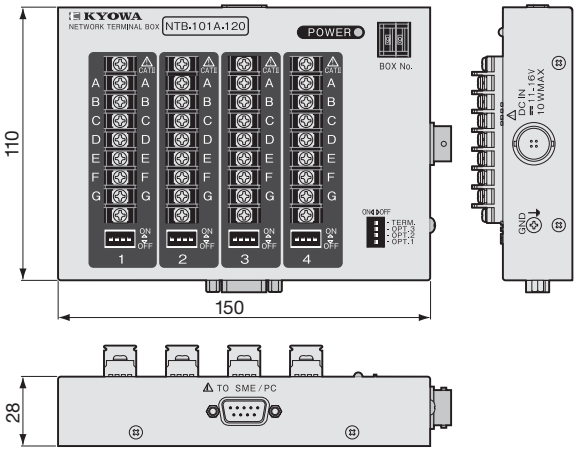
For remote control of network terminal boxes from a PC, and displaying measurement data in graphs or a numeric format on the PC screen.	
Specifications :	Number of measuring units: NTB-100A series: 1 to 99 (The number of MAX CHs is 396.)
Measuring function :	Relative (relative value) measure data with an initial unbalance value deducted. ZERO measurement: Measure initial unbalance value.
CH conditions :	Meas channel ON/OFF, CAL coeffcient calculation ON/OFF, Relative measurement ON/OFF, CAL coeffcient, Offset, Unit, Dec, digits, Ref resist, CH Name (20 characters)
Meas condition file :	Load and save
Meas operation :	MONITOR Meas:Measure ZERO value during MONITOR measurement INTERVAL Meas, File dividing function of the measured data: Not divide,every hour, every day.
Interval meas :	Interval Start Time, Interval Time, Repeat 0 to 9999 (0 to infinite) The number of interval measuring steps: 5
Numeric display function of measured data :	The number of available
Numeric Display :	1
Display switching function :	List only Numeric display: Arbitrary 1 CH to MAX 5 CHs. Font size (Large, Medium, Small)
Graph display function of measured data :	
Graph type : Y-YIME, BAR graph(with perk hold function)	
With the auto scale function during the measurement	

Measured data saving function:	
	The measured data is saved with the CSV format.
TEDS compatible :	Load the information of the TEDS sensor and automatically set it to the CH condition, CH Name writable to the TEDS information (KYOWA sensor only, within 28 characters)
Dimension setting of the recorded data :	Saved in the hard disk of the PC.
File split :	No split Split every hour Split every day
System Requirements :	
CPU :	Pentium4 2GHz or higher
OS :	Microsoft Windows XP (32-bit) Microsoft Windows Vista (32-bit)
Memory :	1 GB or more 2 GB or more for Vista
VistaHard disk :	At least 10 MB free disk space (Not including the size of data file to be created)
Display resolution :	1024 × 768 minimum
Colors :	Full color or higher
USB-CAN converter :	Model LEAFLIGHT HS

■Dimensions



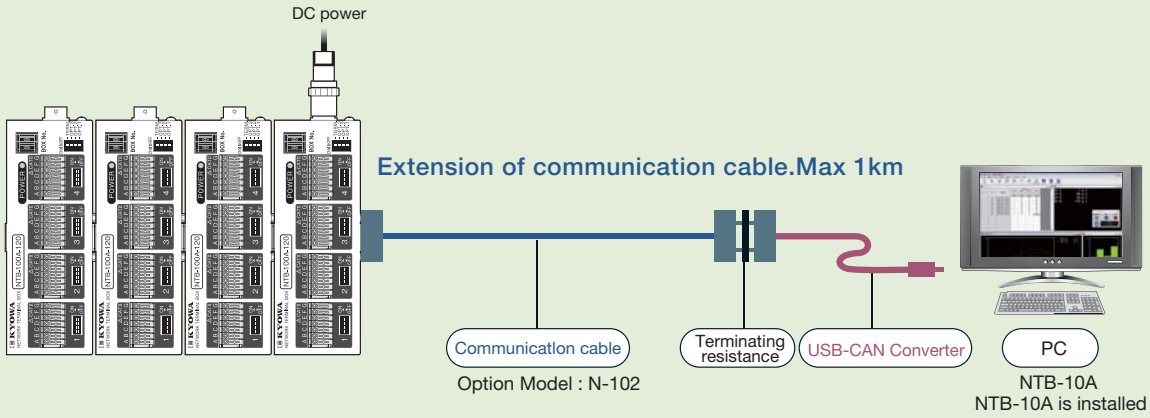
NTB-100A-120



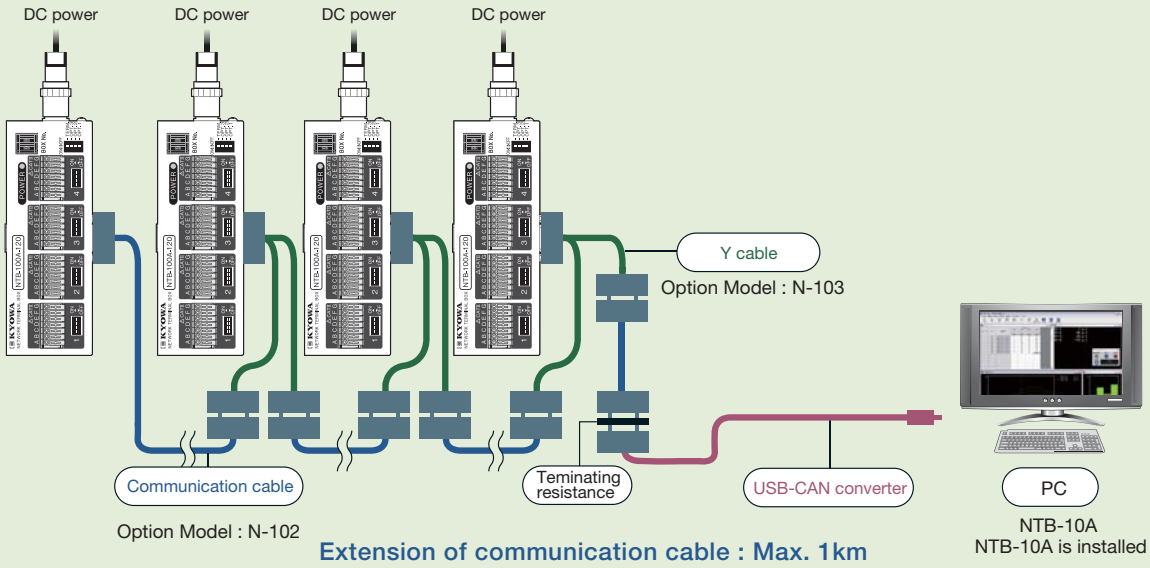
NTB-101A-120

●The figure below is a chart of connecting wires where the Network Terminal Box is connected with the PC.

Case A Fou NTBs are connected (*Up to 8 units can be connected)



Case B 4 NTBs are distributed separately (*Up to 8 unlts can be connected)



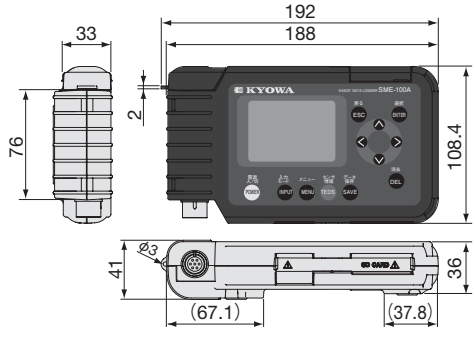
Handy Data Logger
SME-100A/101A

Connect the SME-100A/101A to the NTB-100A series for digital measurement of 33 channels.

- Fits in Hand and Easy to Use.
- Compact and light weight
- Built in bridge circuit for direct connection of a strain gage
- Wide measuring range: ±300,000 μm/m
- Data saved in SD card can be read and controlled by a PC
- Driven by AA batteries (sold separately)
- TEDs compatible

The strap is useful for field inspection and for confirming proper sensor installation. The SD card (option) simplifies data transmission to PC. Using the attached input cable, a strain gage can easily be connected.

Dimensions



Specifications

Number of measuring channels :	1 (in independent use of the logger)
	Max. 33 channels with NTBs connected
	to the logger∗33 channels = 1 + 32
	from 8 NTBs
Sampling frequency :	(In independent use, or NTB-dependent when
	connected to NTBs)
	Approx. 0.5 sec : 0 to ± 30000 μm/m
	Approx 1 sec: ± 30000 μm/m or more
	: Temperature measurement with civil engineering
	transducer with temperature measuring function
Measurement mode :	RELATIVE mode
	(the zero value is subtracted from measurements)
	∗"Zero" denotes the initial unbalance during strain
	measurement, and can be acquired at any time.
Arithmetic operation :	Calculation using a coefficient
Applicable sensor :	Strain gages, strain gage transducers,
	civil engineering transducers with temperature
	measuring function

Strain Gage	Resistance strain gauge application
1-gage method	120, 240, 350Ω
2, 4gage method	120 to 1000Ω

Bridge excitation :	Constant-voltage bridge excitation: Approx. 2VDC
	Constant-current bridge excitation: Approx. 5.6mA
	(bridge resistance 350Ω)
Measuring range :	Strain measurement
	0 to ± 300000 μm/m (constant-voltage bridge excitation)
	0 to ± 20000 μm/m (constant-current bridge excitation)
	Temperature measurement with civil engineering transducer
	with temperature measuring function -30.0˚Cto 70.0˚C
Resolution :	Strain measurement
	0 to ± 30000 μm/m : 1 μm/m
	± 30000 to ± 300000 μm/m : 10 μm/m
	Temperature measurement with civil engineering transducer
	with temperature measuring function 0.1˚C
Accuracy :	(NDIS one-touch connector, 4-gage connection)
	Strain measurement
	0 to ± 30000 μm/m : ± (0.05% rdg. + 2) μm/m
	± 30000 to ± 300000 μm/m : ± (0.1% rdg. + 20) μm/m
	Temperature measurement with civil engineering transducer
	with temperature measuring function ± 0.5˚C
Check function :	Insulation resistance measurement : 2 to 100MΩ
	Resistance measurement : 0 to 20kΩ
Interval measurement :	1 minute to 99 hours 59 minutes in 1-minute steps
	Starting date/time: year/month/day/hour/minute
Storage :	SD card (optional)
Applicable SD card :	256MB, 512MB, 1GB, 2GB (FAT16)
	(SDHC is not applicable)
Display :	Monochrome LCD, 128 × 64 dots
TEDS :	Read from TEDS sensors
	Operator input of channel names
	(Kyowa ID only in up to 10 characters)
Operating temperature & humidity range :	
	-10 to 50˚C, 20 to 85%RH (no condensation)
Power supply :	AA battery × 2 Consecutive operation time:
	Approx. 10 hours (with alkaline batteries, NTB not connected)
∗Nickel hydride batteries can also be used.	
∗An AC adapter (optional, DR-523E) is provided for SME-101A	
Auto Power Off :	Power is automatically turned off if no key operation is
	detected for 5 minutes. In interval measurement mode
	with an interval of 3 minutes or longer, power is
	automatically turned off during standby period and
	turned on again 1 minute before the next measurement
	is started (ON/OFF of Auto Power Off can be specified)
Dimensions :	108.4×188× 41mm (excluding protrusions)
Weight :	Approx. 450g (excluding batteries)

Standard Accessories

Operation Manual (CD-R), input cable, communication cable, AA alkali battery × 2, shoulder belt, hand strap

SME-30A/31A

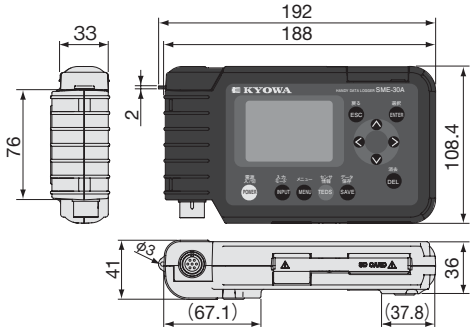
Handy Data Logger

Connect the SME-100A/101A to the NTB-100A series for digital measurement of 33 channels.

- Fits in Hand and Easy to Use.
- Compact and light weight
- Built in bridge circuit for direct connection of a strain gage
- Wide measuring range: ±300,000 μm/m
- Data saved in SD card can be read and controlled by a PC
- Driven by AA batteries (sold separately)
- TEDs compatible

Simplified operation is a unique feature of this handy data logger. You can start measurement just after turning on the power.
The strap is useful for field inspection and confirmation of sensor installation.
The SD card (option) simplifies data transmission to a PC. Using the input cable attached to this instrument, a strain gage can easily be connected.

Dimensions



Specifications

Number of measuring channels : 1	
Sampling period :	Approx. 0.5 sec: 0 to ± 30000 μm/m
	Approx. 1 sec : ± 30000 μm/m or more
	: Civil engineering transducer with
	temperature measuring function
Measuring function :	RELATIVE measurement (relative value measurement):
	Each value is obtained by deducting the ZERO value.
	∗ZERO value is equivalent to the initial unbalance value.
	Capable of obtaining the ZERO value at arbitrary timing
Arithmetic operation :	Calculation using coefficients
Applicable sensor :	Strain gages, strain gage transducers,
	civil engineering transducers with temperature
	measuring function

Strain Gage	Resistance strain gauge application
1-gage method	120, 240, 350Ω
2, 4gage method	120 to 1000Ω

Bridge excitation :	Constant-voltage bridge excitation: Approx. 2 VDC
	Constant-current bridge excitation: Approx. 5.6 mA
	(bridge resistance 350Ω)
Measuring range :	Strain measurement
	0 to ± 300000 μm/m (constant-voltage bridge excitation)
	0 to ± 20000 μm/m (constant-current bridge excitation)
	Temperature measurement with civil engineering transducer
	with temperature measuring function -30.0˚Cto 70.0˚C
Resolution :	Strain measurement
	0 to ± 30000 μm/m : 1 μm/m
	± 30000 to ± 300000 μm/m : 10 μm/m
	Temperature measurement with civil engineering transducer
	with temperature measuring function 0.1˚C
Accuracy :	Strain measurement
	(when connected with one-touch NDIS connector in 4-gage)
	0 to ± 30000 μm/m : ± (0.05% rdg. + 2) μm/m
	± 30000 to ± 300000 μm/m : ± (0.1% rdg. + 20) μm/m
	Temperature measurement with civil engineering transducer
	with temperature measuring function ± 0.5˚C
Check function :	Insulation resistance measurement : 2 to 100 Mohm
	Resistance measurement : 0 to 20 Kohm
Interval measurement :	1 minute to 99 hours 59 minutes in 1-minute steps
	Starting date/time: year/month/day/hour/minute
Storage :	SD card (option)
Applicable card :	256MB, 512MB, 1GB, 2GB (FAT16) (SDHC-incompatible)
Display :	Monochrome LCD, 128 × 64 dots
TEDS :	Reading function from the TEDS sensor CH name writing
	function (For the manufacture ID : KYOWA only, within 10
	characters)
Operating temperature& humidity range :	
	-10 to 50˚C, 20 to 85% RH (no condensation)
Power supply :	Size AA alkaline dry cell (2)
Consecutive operation time :	Approx. 10 hours (with alkaline batteries)
∗ Nickel metal hydride batteries can also be used.	
∗An AC adapter (optional, DR-523E) is provided for SME-31A.	
Auto Power Off :	Power is automatically turned off if no key operation is
	detected for 5 minutes. In interval measurement mode
	with an interval of 3 minutes or longer, power is
	automatically turned off during standby period and
	turned on again 1 minute before the next measurement
	isstarted (ON/OFF of Auto Power Off can be specified).
Dimensions :	108.4 × 188 × 41mm (excluding protrusions)
Weight :	Approx. 450g (excluding batteries)

Standard Accessories

Instruction Manual (CD-R), Input cable, Size AA alkaline dry cell (2), Shoulder strap, Wrist strap