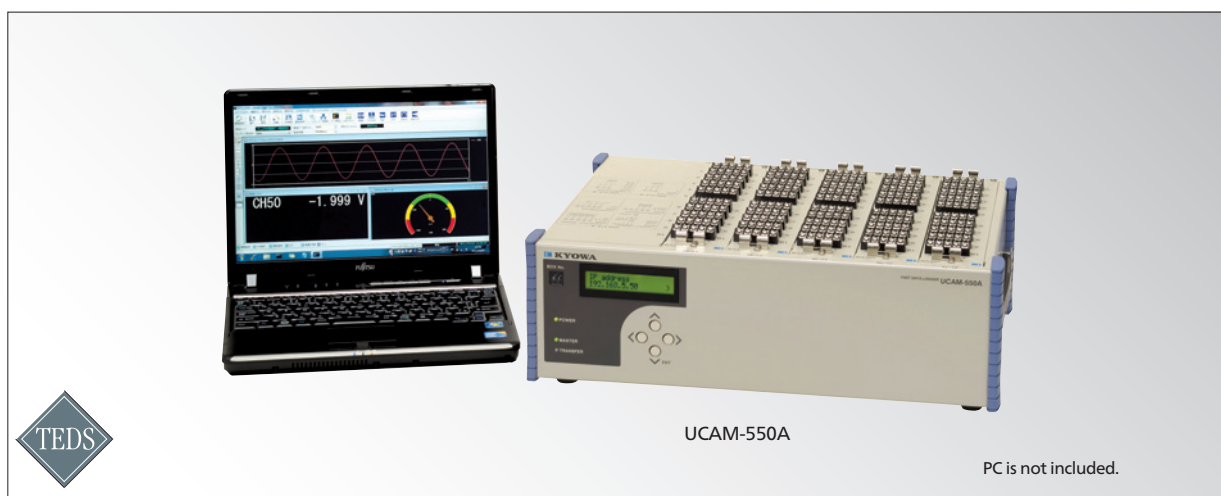


UCAM-550A

Fast Data Logger

3
-40

MEASURING INSTRUMENTS



UCAM-550A

PC is not included.

Synchronous sampling at 50 Hz of all channels

- Synchronous* sampling of all channels
- Synchronous measurement of 1000 channels at max. 50/s
- Synchronous measurement of up to 20 units possible using a LAN cable
- Control using Dynamic Data Acquisition Software DCS-100A
- 5 types of measuring units available

* Except temperature measurement using USM-51B or USM-52B

To Ensure Safe Usage

DCS-100A, standard accessory, can measure up to 300 channels. Measurement up to 1000 channels requires an optional software DCS-106A. See chapter 4.

UCAM-550A is a fast data logger that repeatedly measures a maximum of 1000 channels at an interval of 0.02 s.

Because it is capable of high-speed synchronous measurement, this unit measures a wide range of phenomena, from static to dynamic phenomena. The following 5 types of measuring units are provided.

- Strain Unit USS-51B (Potentiometer sensor also supported)
- Voltage Unit USV-51B
- Thermocouple Unit UST-51B
- Strain/Voltage/Thermocouple Unit USM-51B, USM-52B

They support strain gages, strain-gage transducers, voltage output sensors, potentiometer sensors, and thermocouples, measure and collect strain and stress, load, pressure, and displacement, as well as voltage and temperature.

Input channels are for 1 unit a maximum of 50 channels, and with 20 units cascaded, a maximum of 1000 channels, and these are suited from small-scale to large-scale measurement.



Data Loggers

Measuring Targets and Measuring Unit

Measuring units			USM-51B/52B*	USS-51B	USV-51B	UST-51B
Measuring targets						
Strain gages	Quarter bridge	120 Ω	Yes	Yes		
		350 Ω	Yes	Yes		
Strain-gage transducers	Half bridge 120 to 1 k Ω	Active-dummy	Yes	Yes		
		Active-active	Yes	Yes		
	Full bridge 120 to 1 k Ω	Active opposite-leg	Yes	Yes		
		Full bridge	Yes	Yes		
Potentiometer sensors		1 to 10 kΩ	Yes	Yes		
Voltage		±20 V	Yes		Yes	
Temperature	Thermocouples	K	Yes			Yes
		T	Yes			Yes
		E	Yes			Yes
		J	Yes			Yes
		R	Yes			Yes
		N	Yes			Yes*

*Requires UCAM-550A firmware version 03.00 or higher.

Specifications

■ UCAM-550A

Models UCAM-550A With DCS-100A
UCAM-550A-0 Without DCS-100A

Channels

Maximum of 50 channels/unit (Possible up to 5 units of the measuring unit)
(Each measuring unit measures 10 channels.)

Measurement is possible of up to 1000 channels at maximum by adding an optional software DCS-106A.

*The public command corresponds up to 20 units (Max. 1000 channels).

*DCS-100A corresponds to up to 6 units (Max. 300 channels).

Sampling Method Synchronous sampling of all channels

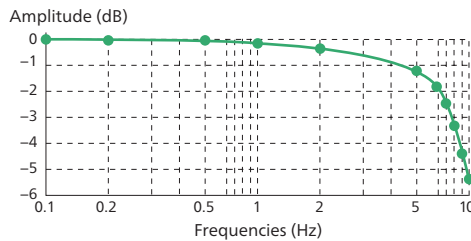
Sampling Frequencies 1, 2, 10, 20, and 50 Hz

*Response frequency depends on the measuring unit.

USM-51B/52B*, USS-51B, USV-51B, UST-51B: DC to 7.8 Hz

Deviation: 0.5 to -3.5 dB

*For temperature measurement with USM-51B/52B using scanning mode, the updating rate is approx. 1 s.



Measuring Functions Original value measurement

Measure value measurement

Interfaces

10 BASE-T, 100BASE-TX

Between PC and UCAM

LAN cable (Straight) Max. 100 m

Between UCAM and UCAM

STP straight cable (See notes) Max. 100 m

Note: "STP" is the initials of Shield Twisted Pair,

and an STP cable is a shielded LAN cable

Display

LCD (20 digits x 2 lines)

Status display LED: POWER (When power ON, lit green)

MASTER (When master, lit green, when slave, not lit)

TRANSFER (When communications, flashing green)

Operation Keys

UP, Down, Left, Right

Data Storage

Measurement data is saved on a PC (No internal storage)

Operating Temperature

0 to 40°C

Operating Humidity

20 to 85% (Non-condensing)

Power Supply

100 to 240 VAC

Approx. 50 VA (With 5 USS-51B strain units installed, and 120 Ω load on all channels connected)

Dimensions

426 W x 132.5 H x 305 D mm (Excluding protrusions)

Weight

Approx. 7 kg (With 5 USS-51B strain units installed)

Standard Accessories AC power cable P-18 (With a 2-pin conversion plug CM-52), ground wire P-72, DVD (DCS-100A, instruction manual)

Dedicated Optional Accessories

■ Strain/Voltage/Thermocouple Unit USM-51B/USM-52B

Input Terminals

USM-51B: NDIS4102 (7 pins) connectors, and screw-soldering terminal blocks

USM-52B: NDIS4102 (7 pins) connectors, and one-touch terminal blocks

Channels

10

Measuring Targets

Strain gages, strain-gage transducers,

potentiometer sensors,

voltage, and thermocouples

Bridge Excitation

2 VDC

Power Supply to Sensors

2 VDC, for potentiometer sensors

Gage Factor

2.00 fixed

Frequency Response

DC to 7.8 Hz, deviation: 0.5, -3.5dB

(Except temperature measurement)

Burnout Check

Performing burnout when checking

TEDS

Reads information from TEDS-installed sensors.

Strain, Potentiometers, and Voltage

Targets	Mode	Measuring Range	Resolution	Accuracy
Strain	L	0 to $\pm 19 \text{ k} \times 10^{-6}$ strain	1×10^{-6} strain	$\pm 0.08\%$ FS
	H	0 to $\pm 300 \text{ k} \times 10^{-6}$ strain	10×10^{-6} strain	
Potentiometers		-50% to 50%	0.01%	$\pm 0.1\%$ FS
Voltage		-20 to 20 V	1 mV	$\pm 0.08\%$ FS

Thermocouples

Types	Range	Accuracy* (Resolution: 0.1 °C)	
K	-200.0 to 1200.0 °C	-200.0 to below -100.0 °C	$\pm(0.3\%$ of reading + 0.8 °C)
		-100.0 to 1200.0 °C	$\pm(0.2\%$ of reading + 0.6 °C)
T	-200.0 to 350.0 °C	-200.0 to below -100.0 °C	$\pm(0.3\%$ of reading + 0.8 °C)
		-100.0 to 350.0 °C	$\pm(0.2\%$ of reading + 0.6 °C)
E	-200.0 to 800.0 °C	-200.0 to below -100.0 °C	$\pm(0.3\%$ of reading + 0.8 °C)
		-100.0 to 800.0 °C	$\pm(0.2\%$ of reading + 0.6 °C)
J	-200.0 to 750.0 °C	-200.0 to below -100.0 °C	$\pm(0.3\%$ of reading + 0.8 °C)
		-100.0 to 750.0 °C	$\pm(0.2\%$ of reading + 0.6 °C)
R	0.0 to 1600.0 °C	0.0 to below 100.0 °C	$\pm(0.6\%$ of reading + 1.2 °C)
		100.0 to 1600.0 °C	$\pm(0.5\%$ of reading + 1.0 °C)
N	-200.0 to 1250.0 °C	-200.0 to below -100.0 °C	$\pm(0.3\%$ of reading + 0.8 °C)
		-100.0 to 1250.0 °C	$\pm(0.2\%$ of reading + 0.6 °C)

* Accuracy of the Internal Reference-junction Compensator
Within ± 1.0 °C (When temperature balanced at input terminals)
(The ambient temperature is 25 ± 10 °C)
Within ± 2.0 °C (When temperature balanced at input terminals)
(The ambient temperature is other than mentioned above.)

Standard Accessories Terminal cover UM-51B

■ Strain Unit USS-51B

Channels

10

Measuring Targets

Strain gage, strain-gage transducers,
potentiometer sensors

Bridge Excitation

2 VDC constant voltage (Applied constantly)

Power Supply to Sensors

2 VDC constant voltage (Applied constantly)

Gage 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)

Target	Mode	Measuring Range	Resolution	Accuracy
Strain	L	0 to $\pm 19 \text{ k} \times 10^{-6}$ strain	1×10^{-6} strain	$\pm 0.05\%$ FS
	H	0 to $\pm 200 \text{ k} \times 10^{-6}$ strain	10×10^{-6} strain	
Potentiometers		0 to $\pm 50\%$	0.01%	$\pm 0.1\%$ FS

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

Optional Accessories Terminal cover UT-50A

■ Voltage Unit USV-51B

Channels

10

Measuring Targets

DC voltage, voltage output type sensors

Measuring Range, Resolution, Accuracy (In static (DC) Inputting)

Measuring Range	Resolution	Accuracy	Signal Source Resistance
0 to $\pm 20,000$ V	1 mV	$\pm 0.05\%$ FS	50 Ω or less

Standard Accessories Terminal cover UT-50A

■ Thermocouple Unit UST-51B

Channels

10

Measuring Targets

Temperature (Thermocouples)

Measuring Range, Resolution, Accuracy (In static (DC) Inputting)

Types		Measuring Range	Accuracy
K	L	-200.0 to 437.0 °C	± 0.8 °C
	H	-200.0 to 1200.0 °C	± 2.8 °C
T	—	-200.0 to 350.0 °C	± 0.7 °C
	—	-200.0 to 260.0 °C	± 0.5 °C
E	L	-200.0 to 260.0 °C	± 0.5 °C
	H	-200.0 to 800.0 °C	± 1.7 °C
J	L	0 to 330.0 °C	± 0.6 °C
	H	0 to 750.0 °C	± 2.0 °C
R	—	0 to 1600.0 °C	± 2.2 °C
	—	-200.0 to below -100.0 °C	$\pm(0.4\%$ of reading + 1.0 °C)
N	L	-100 to 530.0 °C	$\pm(0.3\%$ of reading + 0.8 °C)
		-200.0 to below -100.0 °C	$\pm(0.4\%$ of reading + 1.2 °C)
	H	-100 to 1250.0 °C	$\pm(0.3\%$ of reading + 1.0 °C)
		-100 to 1250.0 °C	$\pm(0.3\%$ of reading + 1.0 °C)

* When temperature balanced at input terminals, and the ambient temperature is 25 ± 10 °C.

Type K, T, E, J, and R: Within ± 0.5 °C

Type N: Within ± 1.0 °C

Note: Accuracy does not include internal reference junction accuracy. Switching between internal and external standard connect compensators is possible. Thermocouple resistance 300 Ω or less (K type).

Standard Accessories Terminal cover UT-50A



Data Loggers

■ Connection Cable U-17 to 20 (See chapter 8.)
■ Isolation Transformer UPT-300B This is used to obtain good measurement results under bad power supply conditions (Strong noise, etc.).
■ One-touch Terminal Block JT-1A A terminal block that supports one-touch connection of input lead wires, and is to be attached to input terminals. 1 for each lead wire (Sale units: 10).
■ Dummy Panel UD-50A Covers the slots of a UCAM-550A that do not have a measuring unit installed.

DCS-100A software, specification for control of UCAM-550A

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

Units	Up to 6 units (up to 300 channels.) Standard Issue Up to 20 units (up to 1000 channels.) With the optional DCS-106A.	Analog Trigger Measurement	Starts/stops recording data based on the pre-set trigger conditions. (Trigger level value: Fixed) End trigger Settable Delay Up to 3000 data for both start and end. Trigger channel Any 1 channel Trigger level Physical quantity Trigger slope Positive or Negative (Trigger level value: Fixed) End trigger Settable Delay Up to 3000 data for both start and end. Trigger channel Any 1 channel Trigger level Physical quantity Trigger slope Positive or Negative
Interface	LAN	Changing Stroke	Changes the data, before the stroke and after the stroke, when using a displacement transducer.
Saving Format	Saves the measured data in the PC folder in the KS2 format file.	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.
Sampling Frequency	1, 2, 10, 20, 50 Hz	Burnout Checking	(USM-51B/52B only.)
Measure Mode	Manual, Manual (Set Record Data), Interval, Analog Trigger	Loading TEDS Sensor Information	Loads the TEDS information automatically and sets the channel conditions. (USM-51B/52B only.)
Measurement Functions	MEASURE or ORIGINAL MEASURE The measured value = Sensor output value - Initial value ORIGINAL The measured value = Sensor output value	Setting Parameter and Loading Parameter	Loads and sets the UCAM-550A internal parameter.
Calibr. Const. Operation	Sets the Calibr. const. operation ON/OFF of all channels at one time. Calibr. const. operation: The measured value × CAL coefficient + Offset.	■ Setting Environment	
Channel Conditions	Measuring ON/OFF, Measuring mode, Range, Calibr. const., Offset, Unit, Initial value, Channel name, Measuring range, Rated capacity, Rated output, Deci Digits, Chk. Val. (Up), Chk. Val. (Down) (Display items can freely be selected.)	Setting Hardware Configuration	Sets the number of units, device names, and measuring units. Loads the measuring unit configuration from the UCAM-550A.
Measuring Initial Value	Measures the initial value of each sensor.	Communication Check	Loads the UCAM-550A version.
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.		

■ Dimensions

