Data Loggers

UCAM-550A

Fast Data Logger

NEW

UCAM-550A

PC is not included.

TEDS

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 page 4-5.

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-type 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-type sensors, and thermocouples, measure and collect strain and stress, load, pressure, and displacement, as well as voltage and temperature.

Measuring 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.

Measuring Targets and Measuring Unit

Measuring targets		Measuring units	USM-51B/52B*	USS-51B	USV-51B	UST-51B
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-type 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).

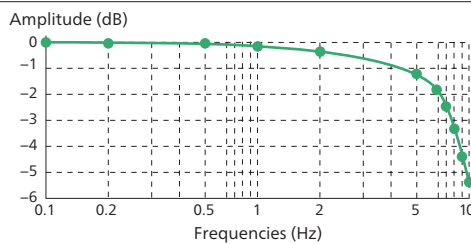**Sampling Method**   Synchronous sampling of all channels

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.

Amplitude (dB) vs Frequencies (Hz)

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 × 132.5 H ×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-type sensors,
	voltage, and thermocouples
Bridge Excitation	2 VDC
Power Supply to Sensors	2 VDC, for potentiometer-type 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 ±19 k ×10^{-6} strain	1 ×10^{-6} strain	±0.08%FS
	H	0 to ±300 k ×10^{-6} strain	10 ×10^{-6} strain	
Potentiometers		-50% to 50%	0.01%	±0.1%FS
Voltage		-20 to 20 V	1 mV	±0.08%FS

Thermocouples

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

* 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-type 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 ±19 k ×10^{-6} strain	1 ×10^{-6} strain	±0.05% FS
	H	0 to ±200 k ×10^{-6} strain	10 ×10^{-6} strain	
Potentiometers		0 to ±50%	0.01%	±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 ±20.000 V	1 mV	±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 to1200.0°C	±2.8°C
T	—	-200.0 to 350.0°C	±0.7°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
N	L	-200.0 to below -100.0 °C	±(0.4% of reading + 1.0 ºC)
		-100 to 530.0 °C	±(0.3% of reading + 0.8 ºC)
	H	-200.0 to below -100.0 °C	±(0.4% of reading + 1.2 ºC)
		-100 to 1250.0 °C	±(0.3% of reading + 1.0 ºC)

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

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

Type N: Within ±1.0 ºC

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).
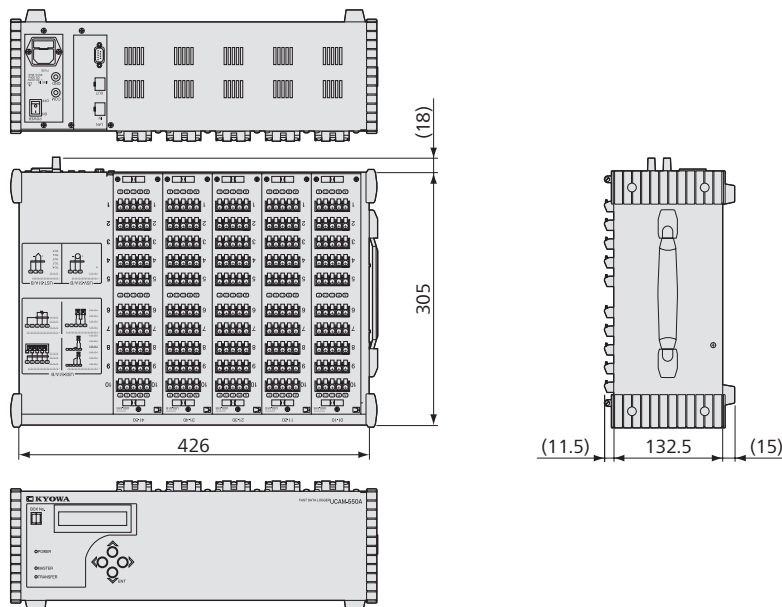
Standard Accessories   Terminal cover UT-50A

■**Connection Cable U-17 to 20 (See page 8-5.)**

■**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**

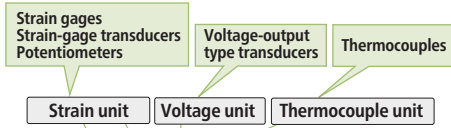Covers the slots of a UCAM-550A that do not have a measuring unit installed.

DCS-100A software, specification for control of UCAM-550A
*For details of DCS-100A, see page 4-3.

Controllable Units	Max. 6 (Max. 300 channels)
	Max. 20 (Max.1000 channels), optional software DCS-106 is required.
Interfaces	LAN
Data Storage	Measured data is saved to data folder in the PC in KS2 format.
Sampling Frequencies	1, 2, 10, 20, and 50 Hz
Measuring Modes	Manual, manual (Data points preset), interval, and analog trigger
Measuring Function	
Measure: Measured value = Sensor output value - Initial value	
Original: Measured value = Sensor output value	
Calibration Factor Calculation	ON/OFF setting in all channels of one batch
Calibration factor compensation: Measured value × Calibration factor + Offset	
Channel Conditions	Measurement, mode, range, calibration factor, offset, unit, initial value, channel name, measuring range, Deci Digits, chk. val. (Up), chk. val. (Down), rated capacity, rated output (Selection of any display item is possible.)
Initial Value Measurement	Measures the initial value of each sensor.
Manual Measurement	Measurement is made from a press of the REC button to a press of the STOP button or by completion of recording using a preset number of measurements.
Interval Measurement	Measurement is made automatically at preset intervals from the preset starting time.
Analog Trigger Measurement	Start/stop recording based upon specified trigger conditions.

Analog Trigger Conditions	
End Trigger	Settable
Delay	For both start and end, max. 3000 points/channel.
Trigger Channels	Any 1 channel
Trigger Level	Sets in physical quantity.
Trigger Slope	Up, down
Changing Stroke	Changes the data, before the stroke and after the stroke, when using a displacement transducer.
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 in manual and interval modes.
Burnout Check	For USM-51B/52B only
TEDS	Reads sensor's information and sets to channel condition automatically. (USM-51B/52B only)
Setting/Loading Parameters	Sets and loads the UCAM-550A internal parameters.
Environmental Settings	
Hardware Configuration	
	Setting of connected units, device name, setting for IP address
	Reading of hardware configuration from UCAM-550A.
Communication Status	Checked by reading the version of the UCAM

■**Dimensions**

■**System Content**

Strain gages
Strain-gage transducers
Potentiometers

Voltage-output
type transducers

Thermocouples

| Strain unit | Voltage unit | Thermocouple unit |

If using only a single UCAM-550A,
directly connect a LAN cable.

LAN cable (Straight)
PC-to-UCAM max. 100 m *

Fast data logger UCAM-550A
Connection of a maximum 20 units, and measurement
of 1000 channels possible.
With the DCS-100A, measurement with up
to 6 units and 300 channels is possible.
With the DCS-106A, measurement with up
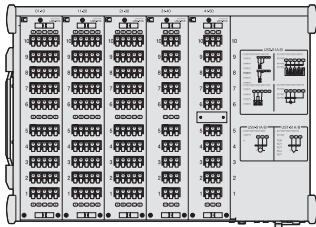to 20 units and 1000 channels is possible.

PC

STP straight cable **
Max. between devices
100 m *

When operating multiple devices synchronously, use a
cascade connection between UCAM-550A with a STP
straight cable **.
No hub is required

**Dynamic Data
Acquisition Software
DCS-100A**
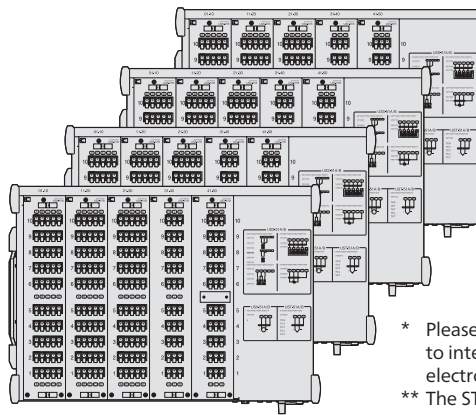
**Optional software
DCS-106A
(Capable of controlling
up to 1000 channels)**

STP straight cable **
Max. between devices 100 m *

*   Please consult with us if adherence
to international standards regarding
electromagnetic compatibility is required.
** The STP cable is a shielded LAN cable.

Data Loggers

UCAM-550A
**Recommended
products for
combination**

Data Analysis Software
DAS-200A
→ **4-7**