



UCAM-550A

Fast Data Logger



Synchronous sampling*¹ of 1000*² channels at 50 Hz

- Channels: Max. 50/unit (max. 1000)
- LAN cables allow synchronization of max. 20 units
- Compatible with potentiometer sensors
- 5 types of measuring units available

*1 Excluding thermocouple measurement with USM-51B/52B.

*2 DCS-106A (sold separately) is required for 1000-channel measurement.

This high-speed data logger system can repeatedly measure up to 1000 channels at 0.02-second intervals.

Due to synchronous measurements, this system alone can accommodate a wide range of phenomena, from static to quasi-dynamic phenomena.

Model

Amplifier

Indicator
&
Display

Handheld

Main Body



UCAM-550A



DCS-100A/106A*

Measuring Unit



Strain/Voltage/Thermocouple Unit
USM-51B (Screw-soldering terminal)



Strain/Voltage/Thermocouple Unit
USM-52B (One-touch terminal)



USS-51B
(Strain)



USV-51B (Voltage)



UST-51B
(Temperature (Thermocouples))

Measuring Targets and Measuring Unit

Measuring Target			Measuring Unit	USM-51B/52B	USS-51B	USV-51B	UST-51B
Strain gage	Quarter bridge	120 Ω		Yes	Yes		
		350 Ω		Yes	Yes		
	Half bridge	Active-dummy		Yes	Yes		
		Active-active		Yes	Yes		
Strain-gage Sensor (transducer)	120 to 1 kΩ	Active opposite-leg		Yes	Yes		
		Full bridge		Yes	Yes		
	Full bridge	120 to 1 kΩ		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

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



Data Logger

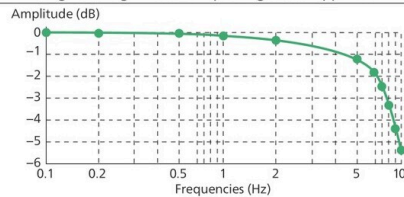
Amplifier

Indicator & Display

Handheld

UCAM-550A Specifications

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 × 2 lines)
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)

■ **Optional Accessories** Measuring Unit USM-51B/USM-52B
USS-51B
USV-51B
UST-51B
Connection Cable U-17 to 20
Isolation Transformer UPT-300BR
One-touch Terminal Block JT-2A
Dummy Panel UD-50A

USS-51B Specifications

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	$\pm 0.05\%$ FS
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

USM-51B/USM-52B Specifications

Input Terminals	USM-51B: NDIS4102 (7 pins) connectors, and screw-soldering terminal blocks USM-52B: NDIS4102 (7 pins) connectors, and one-touch terminal blocks
Measuring Channels	10
Measurement Target	Quarter bridge system 120 / 350 Ω (2-wire/3-wire changed using internal circuit) Half bridge system/ Full bridge system 120 to 1000 Ω Strain gage transducer 120 to 1000 Ω Potentiometer Sensor 1k to 10k Ω Voltage $\pm 20 \text{ V}$ Temperature (Thermocouple) K, T, E, J, R, N (Resistance of thermocouple: 1k Ω or less)
Sampling System	Simultaneous sampling of all channels (Temperature measurement: Scanning, simultaneously update it approx. 1 sec.)
Bridge Excitation	2 VDC constant voltage (applied constantly)
Potentiometer Drive Power Supply	2 VDC constant voltage (applied constantly)
Gage Factor	2.00 fixed (Correction is possible at 2.00/ Ks with the engineering value conversion function)
Frequency Response	DC to 7.8 Hz Deflection: 0.5 dB to -3.5dB (Except temperature measurement)
Burnout Check	When you select, burnout check runs in this moment.
TEDS	Read from TEDS sensor
Dimensions	60 (W) × 120 (H) × 290 (D) mm (not including protrusions)
Weight	USM-51B: Approx. 850 g USM-52B: Approx. 750 g

Measuring range, resolution, accuracy

■ **Strain gage/ Strain gage type transducer/ Potentiometer Sensor/ Voltage**

Measuring Target	Range Mode	Measuring Range	Resolution	Accuracy
Strain	L	0 to $\pm 19 \text{ k} \times 10^{-6}$ strain	1×10^{-6} strain	Within $\pm 0.08\%$ FS
	H	0 to $\pm 200 \text{ k} \times 10^{-6}$ strain	10×10^{-6} strain	Within $\pm 0.08\%$ FS
Potentiometer Sensor		0 to $\pm 50.00\%$	0.01%	Within $\pm 0.1\%$ FS
Voltage		0 to $\pm 20.000 \text{ V}$	1 mV	Within $\pm 0.08\%$ FS

■ **Thermocouple**

Type	Measuring Range	Resolution	Accuracy	
			Internal Reference Junction Compensator	External Reference Junction Compensator
K	-200.0 to +1200.0°C	0.1°C	-200.0 to below -100.0°C $\pm(0.3\% \text{ rdg} + 1.8^\circ\text{C})$	$\pm(0.3\% \text{ rdg} + 1.8^\circ\text{C})$
			-100.0 to +1200.0°C $\pm(0.2\% \text{ rdg} + 0.6^\circ\text{C})$	$\pm(0.2\% \text{ rdg} + 1.6^\circ\text{C})$
			-200.0 to below -100.0°C $\pm(0.3\% \text{ rdg} + 0.8^\circ\text{C})$	$\pm(0.3\% \text{ rdg} + 2.8^\circ\text{C})$
			-100.0 to +1200.0°C $\pm(0.2\% \text{ rdg} + 0.6^\circ\text{C})$	$\pm(0.2\% \text{ rdg} + 2.6^\circ\text{C})$
T	-200.0 to +350.0°C	0.1°C	-200.0 to below -100.0°C $\pm(0.3\% \text{ rdg} + 0.8^\circ\text{C})$	$\pm(0.3\% \text{ rdg} + 1.8^\circ\text{C})$
			-100.0 to +350.0°C $\pm(0.2\% \text{ rdg} + 0.6^\circ\text{C})$	$\pm(0.2\% \text{ rdg} + 1.6^\circ\text{C})$
			-200.0 to below -100.0°C $\pm(0.3\% \text{ rdg} + 0.8^\circ\text{C})$	$\pm(0.3\% \text{ rdg} + 2.8^\circ\text{C})$
			-100.0 to +350.0°C $\pm(0.2\% \text{ rdg} + 0.6^\circ\text{C})$	$\pm(0.2\% \text{ rdg} + 2.6^\circ\text{C})$
E	-200.0 to +800.0°C	0.1°C	-200.0 to below -100.0°C $\pm(0.3\% \text{ rdg} + 0.8^\circ\text{C})$	$\pm(0.3\% \text{ rdg} + 1.8^\circ\text{C})$
			-100.0 to +800.0°C $\pm(0.2\% \text{ rdg} + 0.6^\circ\text{C})$	$\pm(0.2\% \text{ rdg} + 1.6^\circ\text{C})$
			-200.0 to below -100.0°C $\pm(0.3\% \text{ rdg} + 0.8^\circ\text{C})$	$\pm(0.3\% \text{ rdg} + 2.8^\circ\text{C})$
			-100.0 to +800.0°C $\pm(0.2\% \text{ rdg} + 0.6^\circ\text{C})$	$\pm(0.2\% \text{ rdg} + 2.6^\circ\text{C})$
J	-200.0 to +750.0°C	0.1°C	-200.0 to below -100.0°C $\pm(0.3\% \text{ rdg} + 0.8^\circ\text{C})$	$\pm(0.3\% \text{ rdg} + 2.8^\circ\text{C})$
			-100.0 to +750.0°C $\pm(0.2\% \text{ rdg} + 0.6^\circ\text{C})$	$\pm(0.2\% \text{ rdg} + 1.6^\circ\text{C})$
			-200.0 to below -100.0°C $\pm(0.3\% \text{ rdg} + 0.8^\circ\text{C})$	$\pm(0.3\% \text{ rdg} + 2.8^\circ\text{C})$
			-100.0 to +750.0°C $\pm(0.2\% \text{ rdg} + 0.6^\circ\text{C})$	$\pm(0.2\% \text{ rdg} + 2.6^\circ\text{C})$
R	0.0 to +1600.0°C	0.1°C	0.0 to below +100.0°C $\pm(0.6\% \text{ rdg} + 1.2^\circ\text{C})$	$\pm(0.6\% \text{ rdg} + 2.2^\circ\text{C})$
			+100.0 to +1600.0°C $\pm(0.5\% \text{ rdg} + 1.0^\circ\text{C})$	$\pm(0.5\% \text{ rdg} + 2.0^\circ\text{C})$
			0.0 to below +100.0°C $\pm(0.6\% \text{ rdg} + 1.2^\circ\text{C})$	$\pm(0.6\% \text{ rdg} + 3.2^\circ\text{C})$
			+100.0 to +1600.0°C $\pm(0.5\% \text{ rdg} + 1.0^\circ\text{C})$	$\pm(0.5\% \text{ rdg} + 3.0^\circ\text{C})$
N	-200.0 to +1250.0°C	0.1°C	-200.0 to below -100.0°C $\pm(0.3\% \text{ rdg} + 0.8^\circ\text{C})$	$\pm(0.3\% \text{ rdg} + 1.8^\circ\text{C})$
			-100.0 to +1250.0°C $\pm(0.2\% \text{ rdg} + 0.6^\circ\text{C})$	$\pm(0.2\% \text{ rdg} + 1.6^\circ\text{C})$
			-200.0 to below -100.0°C $\pm(0.3\% \text{ rdg} + 0.8^\circ\text{C})$	$\pm(0.3\% \text{ rdg} + 2.8^\circ\text{C})$
			-100.0 to +1250.0°C $\pm(0.2\% \text{ rdg} + 0.6^\circ\text{C})$	$\pm(0.2\% \text{ rdg} + 2.6^\circ\text{C})$

*1. [At input terminal temperature balance]

[Ambient temperature range: $25 \pm 10^\circ\text{C}$]

*2. [At input terminal temperature balance]

[Ambient temperature range: other than temperature ranges described above]

■ **Standard Accessories** Terminal cover UM-51B



Data Logger

Amplifier

Indicator
&
Display

Handheld

UST-51B Specifications

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
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°C)
		-100 to 530.0°C	±(0.3% of reading + 0.8°C)
	H	-200.0 to below -100.0°C	±(0.4% of reading + 1.2°C)
		-100 to 1250.0°C	±(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

USV-51B Specifications

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

■ **Optional Accessories** Terminal cover UT-50A

DCS-100A 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.
Interface	LAN
Saving Format	Saves the measured data in the PC folder in the KS2 format file.
Sampling Frequency	1, 2, 10, 20, 50 Hz
Measure Mode	Manual, Manual (Set Record Data), Interval, Analog Trigger

Measurement Functions	MEASURE or ORIGINAL
	MEASURE The measured value
	= Sensor output value - Initial value
	ORIGINAL The measured value
	= Sensor output value
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.
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.)
Measuring Initial Value	Measures the initial value of each sensor.
Manual Measurement	Records data from REC to STOP or from REC to the number of data, specified on the Manual (Set Record Data).
Interval Measurement	Records data automatically based on the pre-set starting time and recording interval.

Analog Trigger Measurement

	Starts/stops recording data based on the pre-set trigger conditions. (Trigger 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

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.
*Measure Mode: Manual and Interval only.

Burnout Checking (USM-51B/52B only.)

Loading TEDS Sensor Information

Loads the TEDS information automatically and sets the channel conditions. (USM-51B/52B only.)

Setting Parameter and Loading Parameter

Loads and sets the UCAM-550A internal parameter.

Setting Environment**Setting Hardware Configuration**

Sets the number of units, device names, and measuring units. Loads the measuring unit configuration from the UCAM-550A.

Communication Check Loads the UCAM-550A version.

Dimensions