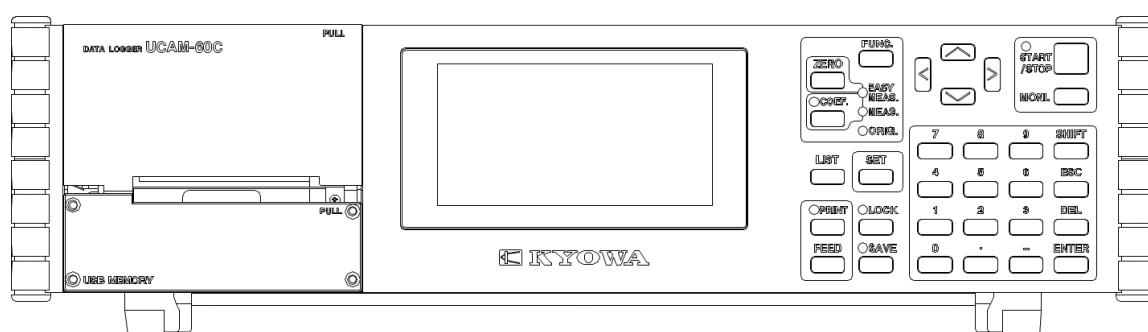


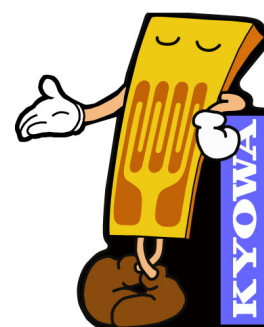
DATALOGGER

UCAM-60C

Simplified Instruction Manual



See the instruction
manual in the enclosed
CD-R for details.



TYPE

The following types of UCAM-60C are available depending on the specifications of the power supply.

UCAM-60C-AC	For AC power supply	AC 100 ~ 240 V
UCAM-60C-DC	For DC power supply	DC 10 ~ 16 V

STANDARD ACCESSORIES

The following accessories are enclosed with the UCAM-60C. Check that there are no missing accessories after opening the package.

• Instruction Manual (CD-R)		1 set
• Simplified Instruction Manual		1 booklet
• AC power supply cable P-18	(for devices running on AC power)	1 unit
• 3P-2P conversion adaptor CM-52	(for devices running on AC power)	1 piece
• AC power supply fuse	(for devices running on AC power)	1 piece
• DC power supply cable P-76	(for devices running on DC power)	1 unit
• DC power fuse	(for devices running on DC power)	1 piece
• Thermal recording paper UCAM-60A-RP		1 roll
• Magnet screwdriver		1 unit
• Ground wire		1 unit
• Terms and Conditions of New Product Warranty		1 copy

OPTIONAL PRODUCTS

The following options are available for the UCAM-60C. Select the right options for your measurement.

• Dedicated built-in scanner, TEDS-compatible	USS-61B
• Dedicated built-in scanner with NDIS connectors, TEDS-compatible	USS-62B
• Dedicated built-in scanner with lightning arrester, TEDS-compatible	USS-63B
• Short Bar (1-gage 2-wire used for short between terminal B and C)	ML-1000-3H1
• Control software	UCS-60B
• Scanner interface for USB-70 series	USI-67A
• External input/output unit	UIO-60A
• AC adaptor for UCAM-60C-DC	H-12439

The following scanners can be used in other UCAM series as well.

Follow the instructions in the instruction manual enclosed with the scanner and the instruction manual (CD-R) enclosed with the main unit.

- Scanner USB-70 series

SAFETY PRECAUTIONS (Be sure to read this before use)

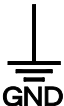
BEFORE USE

Be sure to comply with the following safety precautions during use.

Kyowa Electronic Instruments Co., Ltd. shall not be liable for any damage suffered as a result of using the product not in compliance with these safety instructions.

SAFETY SYMBOLS

- The following symbol markings are used in this device to ensure that it is used safely.

	Indicates the grounding terminal. Ground all terminals showing this symbol in this device where possible. However, this shall exclude cases in which a 3-pin AC power supply cable is used for grounding.
---	---

- The following warning and caution symbols are used in these Safety Precautions and this device to ensure that it is used safely.

 WARNING	Possibility of death or serious injuries being inflicted on the user when handled wrongly.
 CAUTION	Risk of damage being suffered by the user or possibility of physical damage when handled wrongly.

WARNING

•Grounding

To prevent electric shock, ground this device where possible before connecting the AC power supply cable.
If grounding is not carried out, there is a risk of electric shock when a failure or current leakage occurs.
Either use a 3-pin AC power supply cable to ground the unit, or connect the “GND” terminal to the earth.

•Necessity of grounding terminal

To prevent electric shock, do not disconnect the external ground wire of this device, and do not remove the wiring of the ground terminal.

•Checking the grounding function

To prevent electric shock, check that there is no fault in the grounding function before operating this device.
If you think there is a fault in the protective grounding and grounding function of the fuse holder etc., do not operate this device.

•Power supply

To prevent fire, check that the voltage of the power supply that you are using matches the power supply voltage specifications of this

•Power supply cable and power supply outlet

To prevent electric shock and fire, use the enclosed power supply cable and 3P-2P conversion adapter, and where possible,

use a power supply outlet equipped with a ground terminal.

When using a 3-pole power supply cable, use a 3-pole power supply outlet equipped with a ground terminal.

If a power supply extension cable without a ground wire is used, the protection function will be disabled.

When connecting the power supply cable, connect the ground terminal to the earth first before doing so.

When disconnecting the power supply cable, do so first before disconnecting the ground wire.

Make sure this device is grounded first before taking any measurements.



- **Fuse**

To prevent fire, use only fuses with the specified ratings (current, voltage, type) in this device.

Do not use fuses that are not specified, and do not short-circuit the fuse holder.

Pull out the power supply cable first before replacing the fuse.

- **External connections**

To prevent electric shock, ground this device properly first before connecting any external devices such as PCs and the measured object.

- **Flammable gas atmosphere**

To prevent fire and explosions, do not use this device in a location where there are flammable gases, flammable vapors, or flammable dust.

To prevent failure and accidents due to wrong handling and installation, understand the operating environmental conditions and operating method indicated below first so that this device can be used correctly and safely to exploit its performance satisfactorily.

- To prevent malfunction and accidents due to erroneous handling and installation, and to allow the UCAM-60C for a safe and well performance, understand the handling method and condition by reading the following instructions.

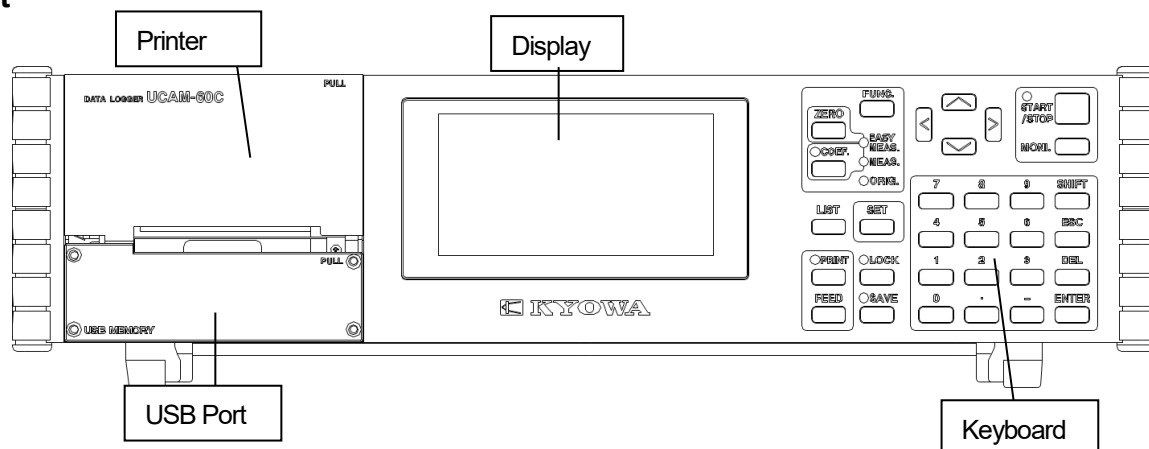


CAUTION

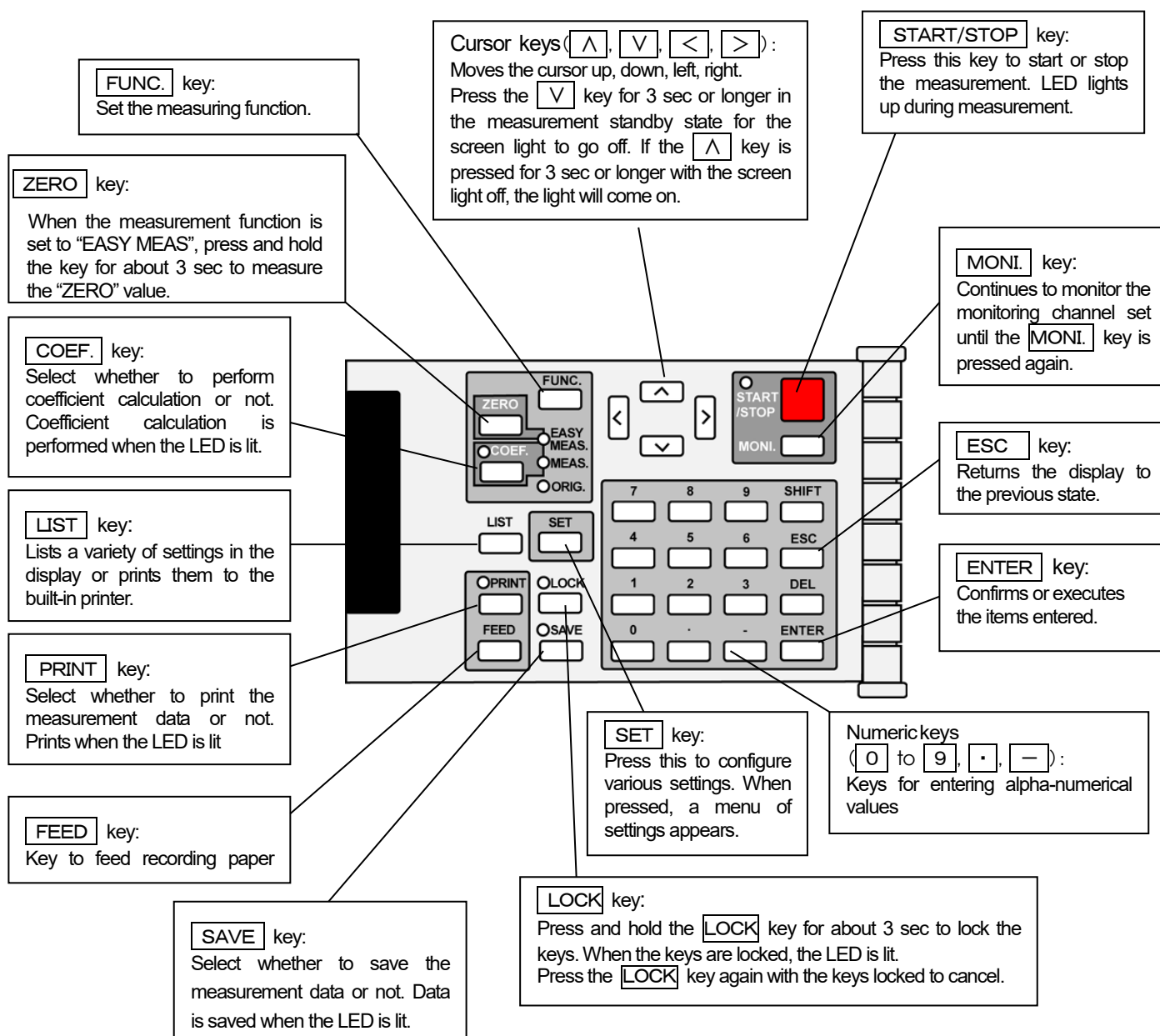
- 1) **Do not turn off the power supply when reading/writing a data file and do not take out the USB memory.**
 - The data file may be damaged or lost.
 - This may result in a failure.
- 2) **After turning off the power supply, wait for 5 sec or longer before turning on the power supply again.**
 - If the power supply is turned on within 5 sec or turned on/off repeatedly, the fuse may be broken or this device may malfunction by the rush current generated when the power supply is turned on.
- 3) **Use this device within a temperature range of 0 - 50°C.**
 - When used outside the operating temperature range, this will result in a failure or a drop in the performance.
 - When you have no choice but to use this device in a cold place or location exposed to direct sunlight, use a blind or insulate the device.
- 4) **Do not block the ventilation outlets.**
 - When there is no space for heat release, the temperature inside this device will rise, resulting in a failure or a drop in the performance.
- 5) **Use this device in a relative humidity range of 20 - 85%.**
 - When used outside the operating humidity range or in an environment exposed to water droplets, this will result in a failure or a drop in the performance.
- 6) **Do not use this device straightaway if the environment changes suddenly.**
 - Leave the device in the operating environment for a while to let it get used to the environment first before use.
 - When the ambient temperature changes suddenly due to movement etc., condensation may occur, resulting in a failure or a drop in the performance.
- 7) **Do not use this device in a dusty environment.**
 - Use the device in an environment in which PCs can be used.
 - When the printer or USB port is left open, dust will get inside the device, resulting in a failure or a drop in the performance.
- 8) **Do not use this device in an environment exposed to vibration and shock.**
 - Do not use the device in a location exposed to vibration and shock.
 - When exposed continuously to vibration or a large shock, this will result in a failure or a drop in the performance.
- 9) **Do not use this device in a strong magnetic field.**
 - Use the device in an environment in which PCs can be used.
 - When used near devices that generate a strong magnetic field such as radios, microwave ovens, electric furnaces, this will result in a failure, malfunction, or a drop in the performance.
- 10) **Do not use this device in a location where the power supply environment is bad.**
 - For AC power specifications, use a 100 V - 240 V, noise-less power supply which does not stop momentarily.
 - For DC power specifications, use a 10 V - 16 V, noise-less power supply which does not stop momentarily.
- 11) **Do not pull the connection cable.**
 - Connect the cable with some spare allowance so that excessive forces do not act on the connection.
 - If the cable is pulled or subject to excessive forces, this will result in a failure or interrupt the measurement.
- 12) **Warm up this device before use.**
 - After turning on the power supply, wait for about 30 - 60 minutes to warm up the device.

1. Controls and Indicators

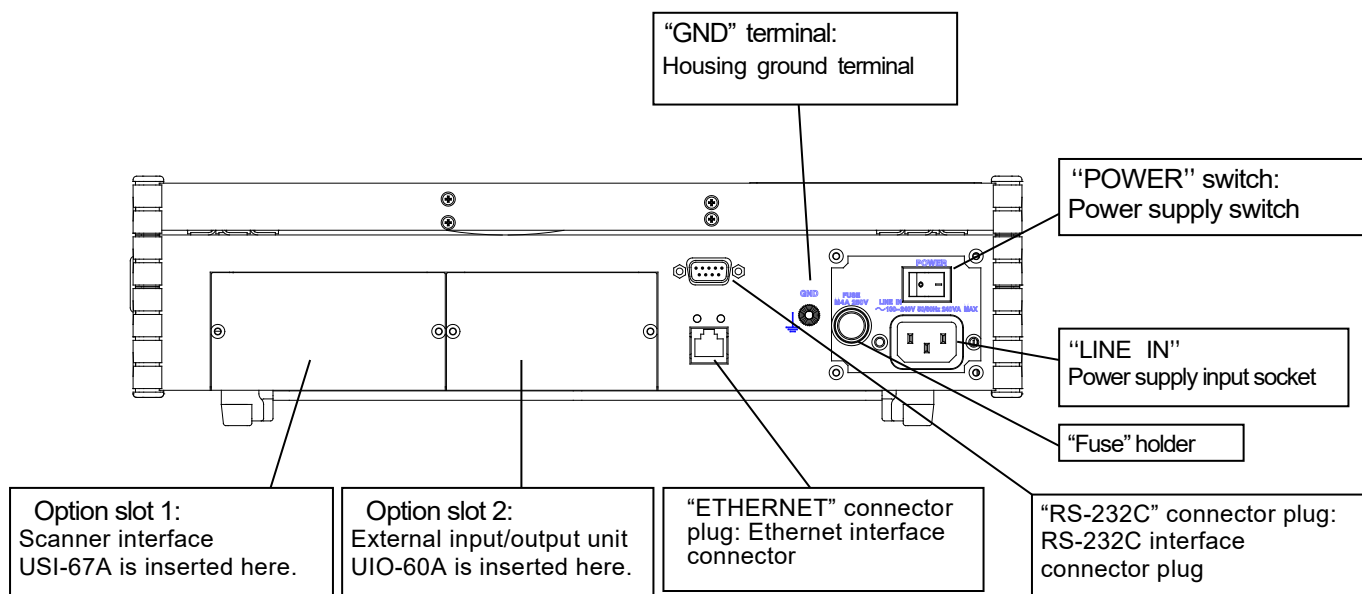
1.1 Front



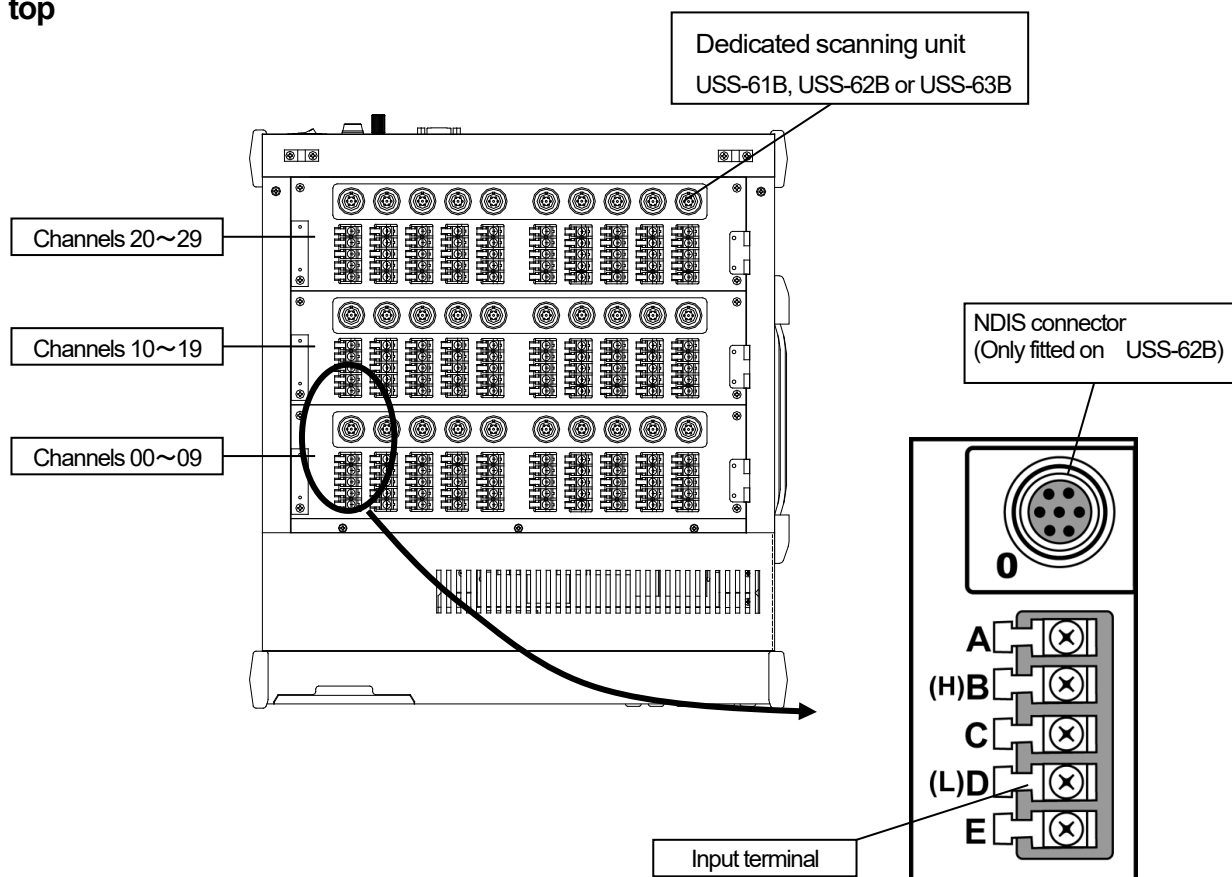
1.2 Detailed Description of Keyboard



1.3 Back



1. 4 top



2.Connecting between the power supply and ground wire

2. 1 Grounding

Be sure to ground the "GND" terminal. Besides acting as a noise countermeasure, it also serves to prevent electric shock that is caused by a current leak in the power supply noise filter. Use a green vinyl covered wire of size 0.75mm² or more for the electric cable.

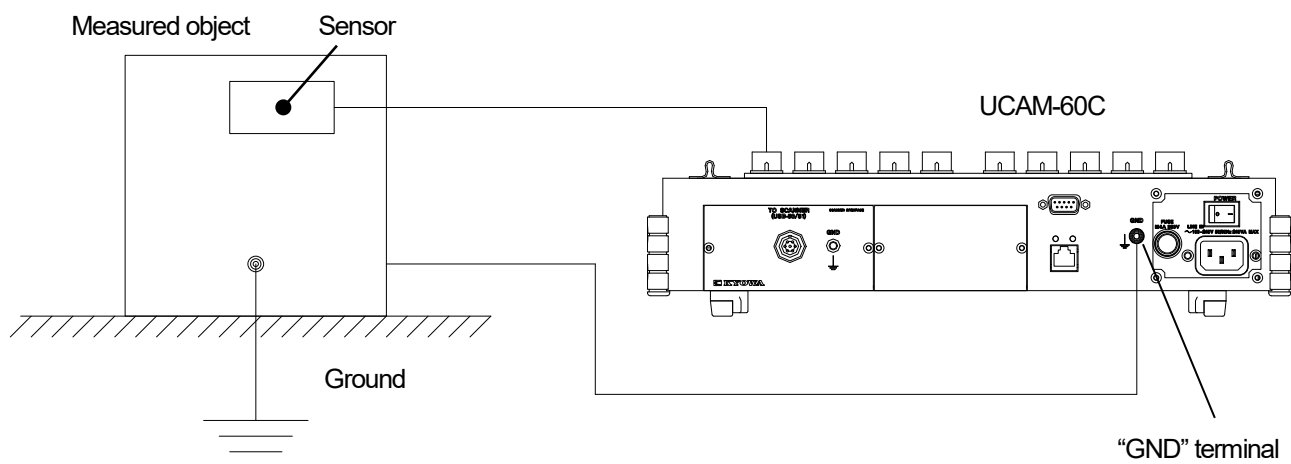
Grounding standards differ depending on the environment. Refer to the grounding examples below and the instruction manual to see how to ground this device so as to reduce the impact of noises and allow stable measurements to be taken.

Basically, grounding is carried out at a single point. When grounding is carried at 2 or more points, a loop may be formed, making the device more susceptible to noises.

● When Measuring object is Grounded

Connect the "GND" terminal of the UCAM-60C to the measured object.

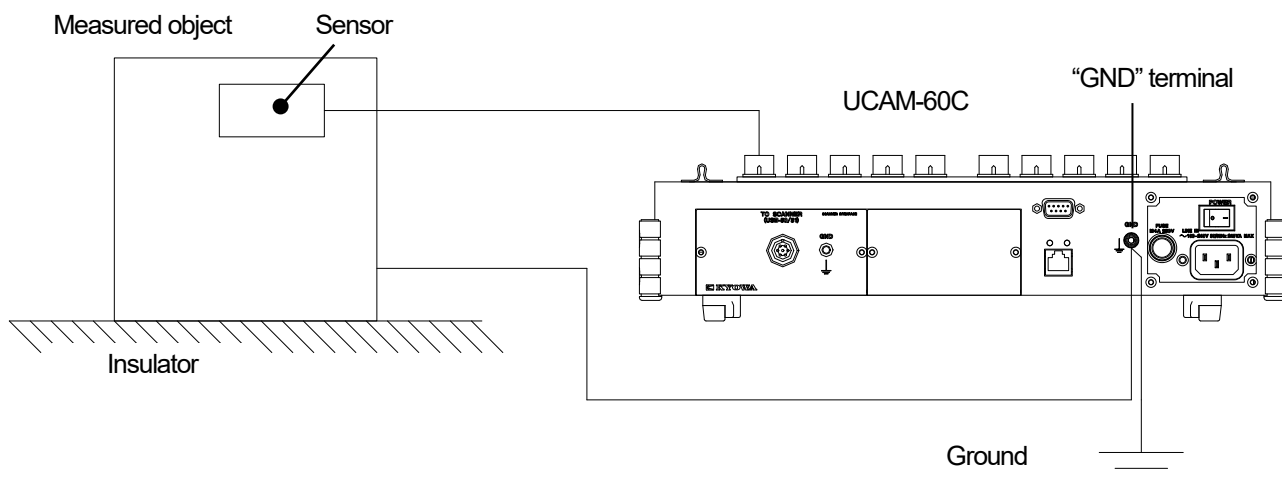
*When using an external scanner, connect the "GND" terminal of the USB-70 series or other scanner to the measured object.



● When measured object is Insulated from the Ground

Ground the UCAM-60C to the earth, and then connect the "GND" terminal of the UCAM-60C to the measured object.

*When using an external scanner, ground the external scanner to the earth, and then connect the external scanner to the measured object.



Caution

- Check the instruction manual for details on special cases such as when the measured object has an electric potential.
- Check the instruction manual for details on how to carry out lightning surge protection.

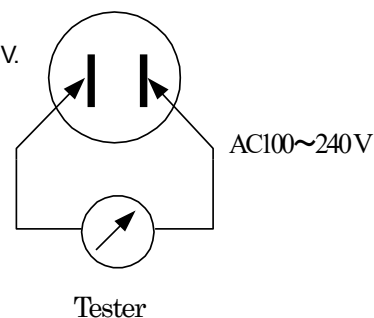
2. 2 Connecting Power Cable

- **For AC power supply specifications**

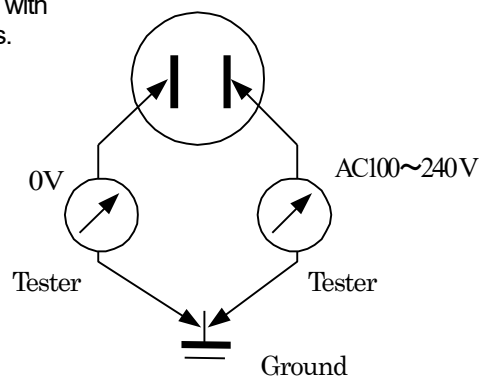
The power supply specifications of this device is AC100 - 240V.

Before connecting the power supply, check the items below.

- (1) Measure the voltage between the 2P of the outlet with a tester and check that it is 100 - 240 V.



- (2) Measure the voltage between the ground and each of the 2P of the outlet with a tester, and check that one side is 0 V while the other side is 240 V or less.



- **For DC power supply specifications**

The DC power supply specifications of this device is DC10 - 16 V. Before connecting the power supply, check the items below.

- (1) Check that the DC power supply voltage is 10 - 16 V.
When a voltage other than the specified power supply voltage is used, this will result in a failure or a drop in the performance.
- (2) Connect the "GND" terminal at the back to the earth.
- (3) Connect the DC power supply cable (P-72) to the DC power supply.
Be careful not to mix up the polarity then.

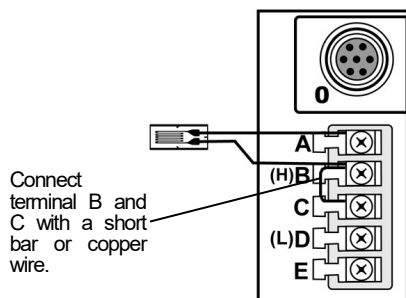
MEMO

For the UCAM-60C-DC, the (-) terminal of the DC power supply is grounded to the housing.

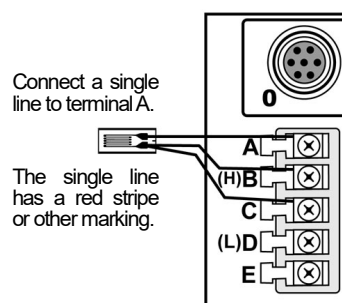
Therefore, when a measurement device whose (+) terminal is grounded to the housing is connected, or when the (+) terminal of the power supply is connected to or in contact with the housing, this will result in a failure or a drop in the performance.

3. Connection to a strain gage, strain gage-type transducer and during voltage input

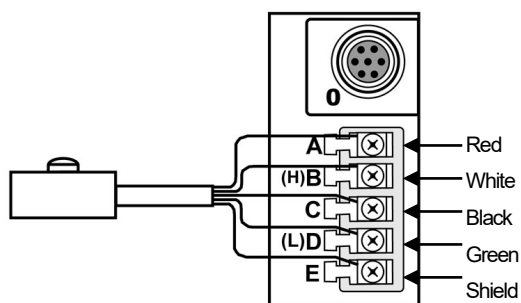
1-gage 2-wire-system strain gage



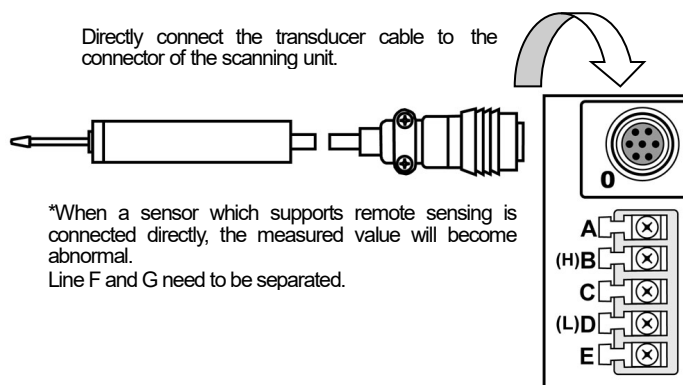
1-gage 3-wire-system strain gage



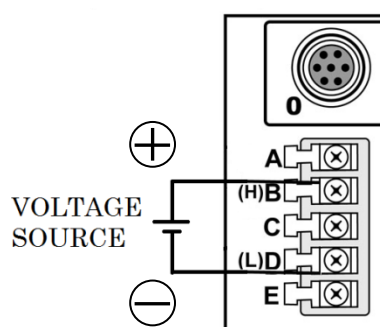
Connecting a sensor with a cable tip



Connecting a sensor with a cable tip that is a NDIS standard



Connection during voltage input



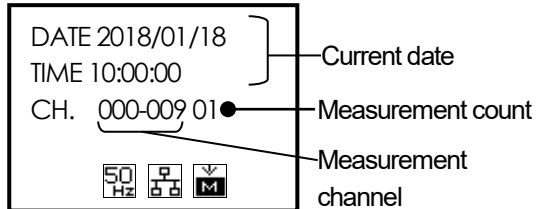
Note

Do not connect the FV-1A and FV-2A sold by KYOWA to the UCAM-60.
1-gage 3-wire-system strain gage's single line has a red stripe or other marking.

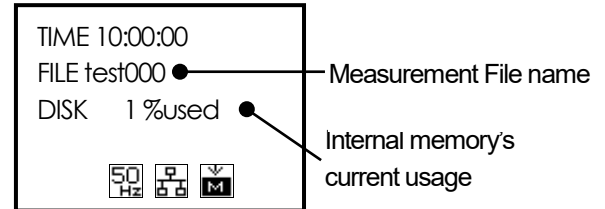
4. about the main screen

The main screen to be displayed in a ready state can be switched with the cursor keys  , . The following information appears in each main screen, indicating the current setting status of the UCAM-60C, respectively.

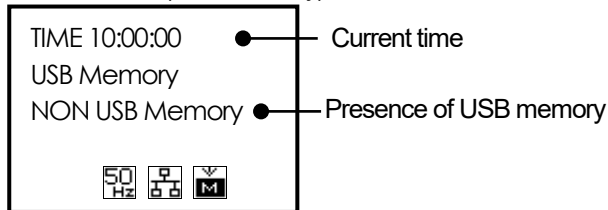
Main screen 1 (measurement condition)



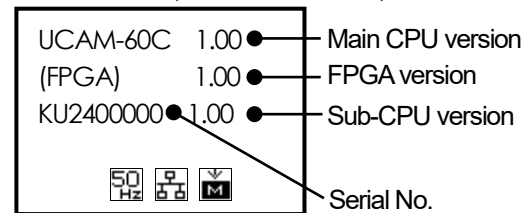
Main screen 2 (data storage)



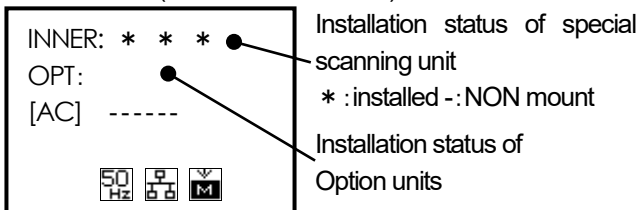
Main screen 3 (USB Memory)



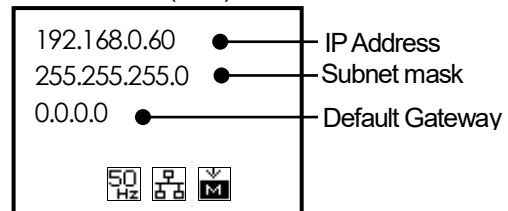
Main screen 4 (version information)



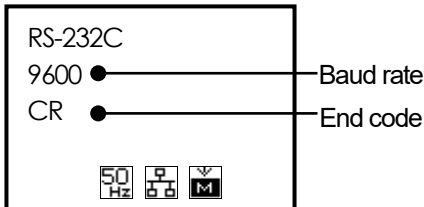
Main screen 5 (unit installation status)



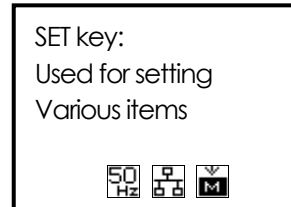
Main screen 6 (LAN)



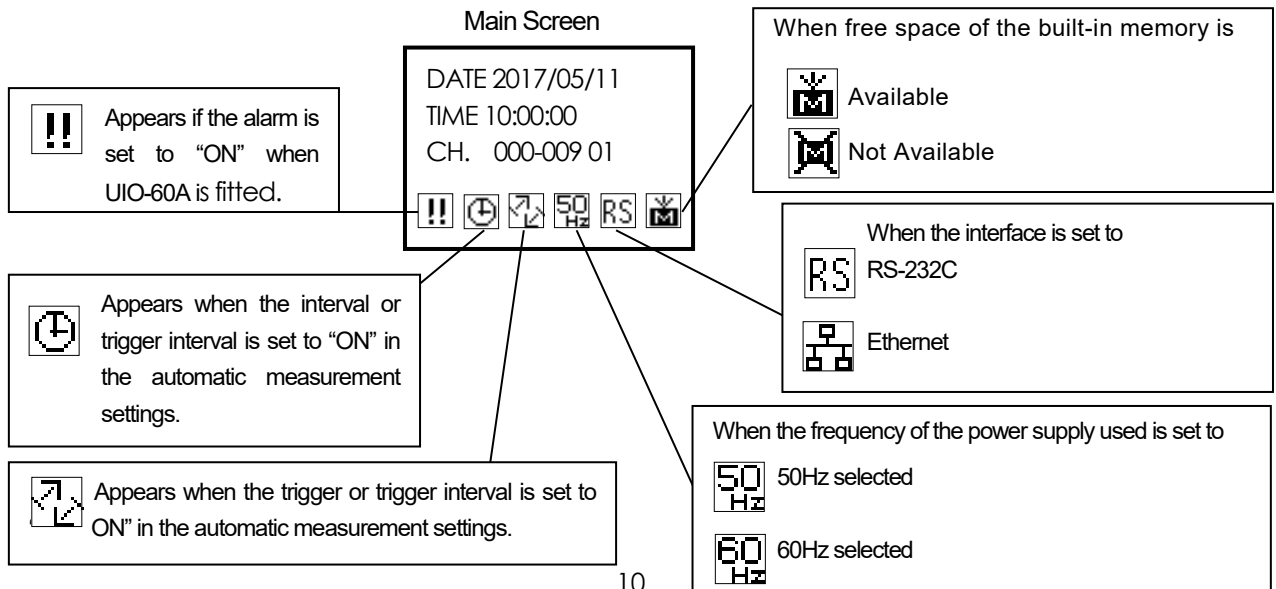
Main screen 7 (RS connection setting)



Main screen 8 (about the SET key)

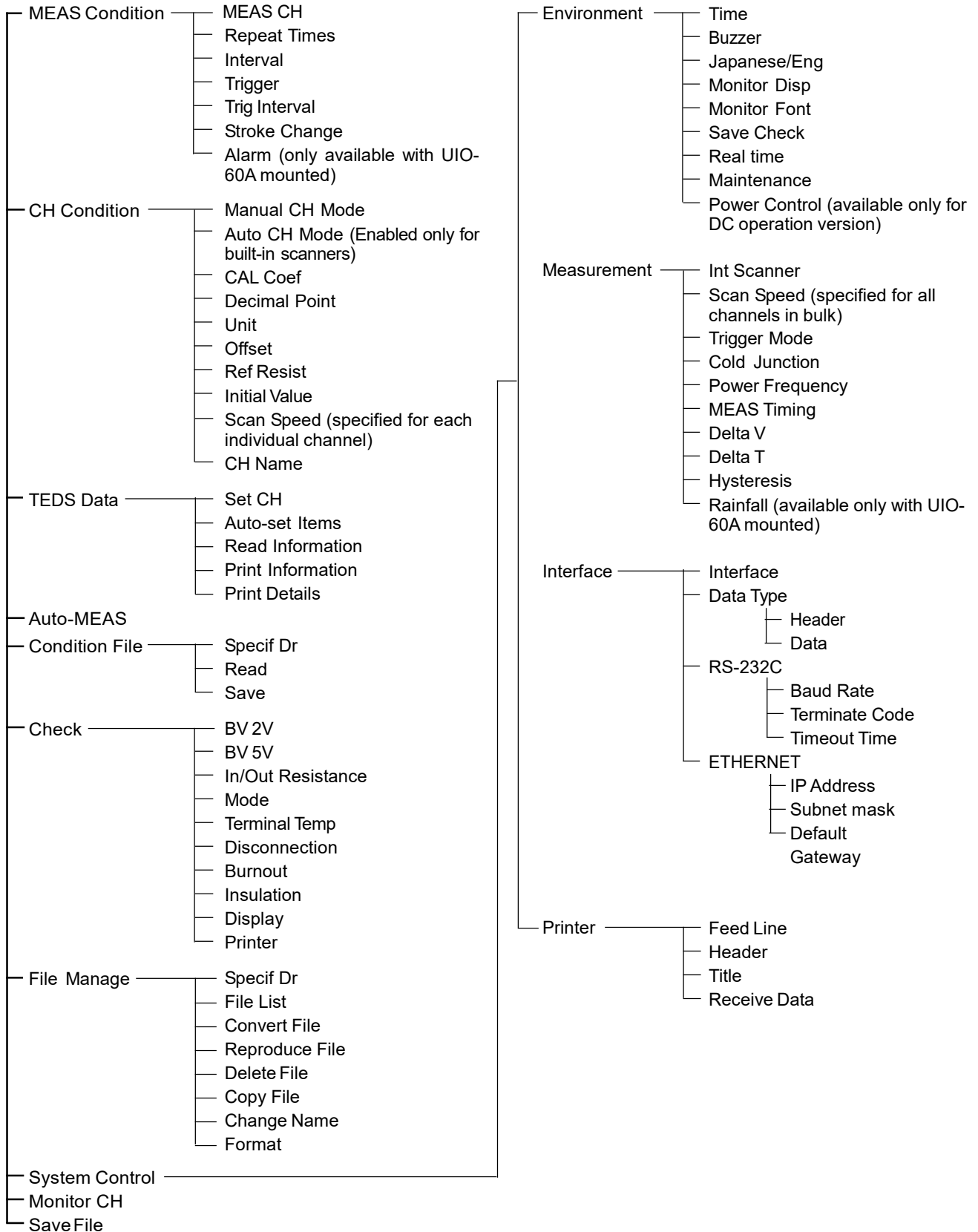


Under the ready state, the following icons are on the main screen, indicating the present setting conditions of the UCAM-60C.



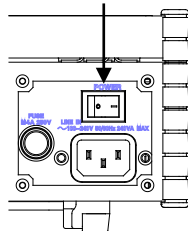
5. Tree of UCAM-60C Setting Menu

The items to configure by pressing the  key on the main unit form a tree structure as shown below. Press the  key to return to the previous menu.



6. Simplified Procedures for Operating UCAM-60C

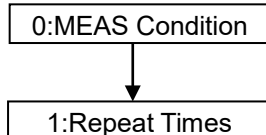
An explanation on how to connect the strain gauge and strain gauge-type transducer, set the measurement conditions and condition of each channel, and perform measurement is given here.

1 Connect the sensor, and turn ON the power supply of the main unit. *See “2. Connection to a strain gauge, strain gauge-type transducer” for details on the connection of the sensor.	Turn the POWER switch at the back to [ON]. 	Example of a display in the main screen display DATE 2018/01/18 TIME 10:00:00 CH. 000-009 01  The display can be switched to the various settings using the cursor keys (, ).																		
2 Built-in scanner user settings	 Press the SET key to display the main menu. From the main menu, obtain the target menu in the following flow: 7:system control ↓ 1:Measurement ↓ 0:Int Scanner	Int Scanner Use (1:Use) (0:Not Use) (1) Press the  key to select [Use]. (2) Press the  key in this state to confirm. The display will return to the previous menu automatically.																		
3 Setting scanning speed	On the “1. Measurement” menu, select 1:Measurement ↓ 1:Scan Speed (1) Select the desired scanning speed by pressing the numeric key. Usually, “1: Normal” is selected. (2) Press  key to determine the selection. Then, the indication automatically returns to the previous display.	<table><tr><th>Selection No.</th><th>Scanning Speed</th></tr><tr><td>0 : High speed</td><td>20ms/channel</td></tr><tr><td>1 : Normal</td><td>50ms/ channel</td></tr><tr><td>2 : 0.28Sec</td><td>0.28s/ channel</td></tr><tr><td>3 : 0.5Sec</td><td>0.5s/ channel</td></tr><tr><td>4 : 1Sec</td><td>1s/ channel</td></tr><tr><td>5 : 2Sec</td><td>2s/ channel</td></tr><tr><td>6 : 5Sec</td><td>5s/ channel</td></tr><tr><td>7: 10Sec</td><td>10s/ channel</td></tr></table>	Selection No.	Scanning Speed	0 : High speed	20ms/channel	1 : Normal	50ms/ channel	2 : 0.28Sec	0.28s/ channel	3 : 0.5Sec	0.5s/ channel	4 : 1Sec	1s/ channel	5 : 2Sec	2s/ channel	6 : 5Sec	5s/ channel	7: 10Sec	10s/ channel
Selection No.	Scanning Speed																			
0 : High speed	20ms/channel																			
1 : Normal	50ms/ channel																			
2 : 0.28Sec	0.28s/ channel																			
3 : 0.5Sec	0.5s/ channel																			
4 : 1Sec	1s/ channel																			
5 : 2Sec	2s/ channel																			
6 : 5Sec	5s/ channel																			
7: 10Sec	10s/ channel																			
4 Setting the measurement CH	 Press the SET key to display the main menu. From the main menu, obtain the target menu in the following flow: 0:MEAS Condition ↓ 0:MEAS CH	MEAS CH First CH:000 Last CH:009 (000~999) (1) Move the cursor to the input area with the cursor keys (, , , ). (2) Enter the [First CH] and [Last CH] with the numeric keys ( - ). (3) Press the  key to confirm. The display will return to the previous menu automatically.																		

5

Setting the repeat count

On the "0. MEAS Condition" menu," select:



- A number from 1 - 99 can be set for the repeat count.
- If the count is set to 00, measurement is carried out until the measurement is stopped.

Repeat Times
Times :01
(01 ~ 99=Times)
(00=Infinite)

- (1) Enter the repeat count with the numeric keys [0] - [9]. *Normally once
- (2) Press the **ENTER** key to confirm.
 - The display will return to the previous menu automatically.

6

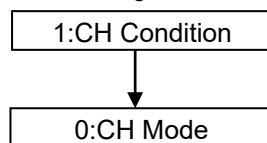
Setting the CH mode

*Set the mode according to the input sensor.



Press the SET key to display the main menu.

From the main menu, obtain the target menu in the following flow:



CH. Mode
000 01 1G120
001 01 1G120
002 01 1G120

Mode No.

- (1) Move the cursor to the mode no. input area with the cursor keys.
- (2) Enter the mode no. with the numeric keys.
e.g. "01" for a strain gage
"12" for a strain-gage transducer

Mode No	Channel Mode	Mode No	Channel Mode
00(SKIP)	Skip	22(TC/T)	Thermocouple, T
01(1G120)	1-gage, 120 Ω, BV 2 V	23(TC/E)	Thermocouple, E
02(1G240)	1-gage, 240 Ω, BV 2 V	24(TC/J)	Thermocouple, J
03(1G350)	1-gage, 350 Ω, BV 2 V	25(TC/R)	Thermocouple, R
04(1G120/D)	1-gage, 120 Ω, true dummy method, BV 2 V	26(Pt100)	Platinum resistance thermometer sensor, 100 Ω (new JIS)
05(1G120/A)	1-gage, 120 Ω, active method, BV 2 V	27(JPt100)	Platinum resistance thermometer sensor, 100 Ω (old JIS)
06(1G350/D)	1-gage, 350 Ω, true dummy method, BV 2 V	28(POT.)	Potentiometer sensor
07(1G350/A)	1-gage, 120 Ω, active method, BV 2 V	29(1G120_5V)	1-gage, 120 Ω, BV 5 V
08(2G/A-D)	2-gage, active-dummy, BV 2 V	30(1G240_5V)	1-gage, 240 Ω, BV 5 V
09(2G/A-A)	2-gage, active-active method, BV 2 V	31(1G350_5V)	1-gage, 350 Ω, BV 5 V
10(2G/COM-D)* ¹	2-gage, common-dummy, BV 2 V	32(1G120D_5V)	1-gage, 120 Ω, true dummy method, BV 5 V
11(4G/A-A)	4-gage, opposite, active, BV 2 V	33(1G120A_5V)	1-gage, 120 Ω, active method, BV 5 V
12(4G)	4-gage, constant-voltage excitation, BV 2 V	34(1G350D_5V)	1-gage, 350 Ω, dummy method, BV 5 V
13(4G_HR)* ²	4-gage, constant-voltage excitation, BV 5 V	35(1G350A_5V)	1-gage, 350 Ω, active method, BV 5 V
14(4G/I(120))	4-gage, constant-current excitation, 120 Ω	36(2G/A-D_5V)	2-gage, active-dummy method, BV 5 V
15(4G/I(350))	4-gage, constant-current excitation, 350 Ω	37(2G/A-A_5V)	2-gage, active-active method, BV 5 V
16(4G/I_HR)* ²	4-gage, constant-current excitation, 350 Ω	38 (LVDT)* ¹	Linear variable differential transformer transducer
17(4G/T)	Transducer with temp. measuring function	39 (LVDT/T)* ¹	LVDT transducer with temp. measuring function
18(V/500mV)	Voltage, 500mV	40 (POT./A)* ¹	Sliding resistance transducer (A part only)
19(V/50V)	Voltage, 50V	41 (POT./A)* ¹	Sliding resistance transducer (A and B parts)
20(I/50mA)	Current, 50mA	42 (USB-70A-S)* ¹	Applied scanner is USB-70A.
21(TC/K)	Thermocouple, K	43 (USB-50/51)* ¹	Usually, not use

*1: Not available for dedicated scanner

*2: Available only with dedicated scanner

7 Setting calibration coefficient

*Coefficient to convert the measurement value quantitatively

(This does not need to be set when the coefficient is not used for multiplication.)



Press the SET key to display the main menu.

From the main menu, obtain the target menu in the following flow:

1:CH Condition



2:CAL Coef

Range that the calibration coefficient can be set
-1.0000E-9 - 9.9999E+9 and
-1.0000E-9 - -9.9999E+9

CAL Coef

000 1.2345E+2
001 1.0000E+0
002 1.0000E+0

- (1) Move the cursor to the input area with the cursor keys.
- (2) Enter the calibration coefficient with the numeric keys.
The symbol is [+] for the key and [-] for the key.
- (3) Press key to determine the setting. Then, the indication automatically returns to the previous display.

8 Setting the number of digits below decimal point

(This does not need to be set when the coefficient is not used for multiplication.)

On the "1:CH Condition" menu, select

1:CH Condition



2:CAL Coef

Selection No.	Number of Digits below Decimal Point
0:(#####)	No decimal point
1:(#####.#)	1 digit
2:(#####.##)	2 digit
3:(#####.###)	3 digit
4:(#####.####)	4 digit
5:(#####.#####)	5 digit

9 Setting units to be output together with the measured values.

*Setting the display unit when indicating the measurement value quantitatively

(This does not need to be set when the coefficient is not used for multiplication.)



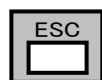
Press the SET key to display the main menu.

From the main menu, obtain the target menu in the following flow:

1: CH Condition



4: Unit



To terminate the setting, press the ESC key.

CH. Unit

000 00(με)
001 00(με)
002 00(με)

- (1) Move the cursor to the unit number input area with the cursor keys.
- (2) Enter the unit no. with the numeric keys.
- (3) Press key to determine the setting. Then, the indicate automatically returns to the previous display

Unit No.	Indicating Unit	Unit No.	Indicating Unit	Unit No.	Indicating Unit
00	με	20	cm/s ²	40	m/s
01	μm/m	21	m/s ²	41	m/min
02	mN	22	G	42	km/h
03	N	23	g	43	Hz
04	kN	24	kg	44	kHz
05	MN	25	t	45	MHz
06	N·m	26	ms	46	rpm
07	kN·m	27	s	47	Ω
08	N·cm	28	min	48	kΩ
09	PA	29	h	49	MΩ
10	hPA	30	mV	50	mW
11	kPa	31	V	51	W
12	MPa	32	mA	52	kW
13	N/mm ²	33	A	53	dB
14	N/m ²	34	K	54	%
15	mmHg	35	°C	55	ppm
16	kgf/cm ²	36	rad	56	pH
17	mm	37	°	57	R
18	cm	38	rad/s	58	(blank)
19	m	39	cm/s		

10 Setting the file name of the measurement data This does not need to be set when the data is only printed and not saved.	SET → SAVE Press the SET key and then, press the SAVE key. File name: 7 alphanumeric Alphanumeric input table <table><tr><td>Numeric key</td><td>0123456789</td></tr><tr><td> ⬆ </td><td>0123456789 abcdefghijklmnopqrstuvwxyz</td></tr><tr><td> ⬇ </td><td>klmnopqrst uvwxyz#% @ _~()</td></tr></table>	Numeric key	0123456789	⬆	0123456789 abcdefghijklmnopqrstuvwxyz	⬇	klmnopqrst uvwxyz#% @ _~()	1. Specifying the file name File Name test001 (abcdefghijklmnopqrstuvwxyz) 0123456789 (1) Move the cursor to the input area with the cursor keys. (2) Enter the text with the numeric keys (0 - 9). The character corresponding to the number key changes each time the cursor key (⬆ , ⬇) is pressed. *Enter the file name in 7 single-byte characters.
Numeric key	0123456789							
⬆	0123456789 abcdefghijklmnopqrstuvwxyz							
⬇	klmnopqrst uvwxyz#% @ _~()							
11 Setting the monitor channels This does not need to be set when monitoring is not carried out.	SET → MONI Press the SET key and then, press the MONI. key. ESC To terminate the setting of monitor channels, press the ESC key	Monitor CH CH(00) : 000 CH(01) : 001 CH(02) : 002 (1) Move the cursor to the input area with the cursor keys. (2) Enter the CH no. to monitor with the numeric keys (0 - 9).						
12 Returning to the main screen	ESC Press the ESC key few times.							
13 Setting various processing of measured data	(1) Press the COEF. key of the function of calibration coefficient calculation. The LED lights up. COEF. (2) Press the SAVE key for saving data in the specified file. The LED lights up. SAVE (3) Press the PRINT key for printing measured data. The LED lights up. PRINT	(1) Enable the contents set in Step 7, 8, 9 (2) Save the data measured under the conditions set in Step 10 in sequence						

14 Measuring the initial values



Press the FUNC. key and select "2: Initial Value" on the display.



Press the START/STOP key to start the initial measurement.

When the initial value measurement is taken with the "SAVE" LED lit, the file will be saved with the file name "storage file name.ini".

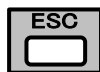
0:MEAS Value
1:Original Value
2:Initial Value
3:EASY MEAS

Initial Value
Start:START/STOP
Stop :START/STOP
Return:ESC

15 Checking the measured data



Press LIST in the main screen immediately after measurement ends to check the measurement data.



Return to the main screen with the ESC key

CH.	DATA	UNIT
000	10	$\mu \varepsilon$
001	15	$\mu \varepsilon$
002	123	$\mu \varepsilon$

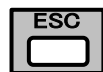
Press the cursor key (,) to scroll.

16 Starting monitor measurement



Press the MONI. to monitor the measurement data entered.

*Set the monitoring CH in Step 11.



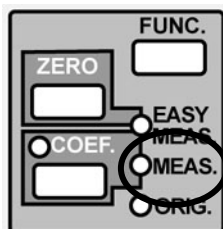
To stop the monitoring, press the monitor key or ESC key.

CH.	DATA	UNIT
000	3512	$\mu \varepsilon$
001	481	MPa
002	2275	N·m

Press the cursor key (,) to scroll.

Here, apply load to strain gages and strain-gage transducers.

17 Measuring strain and transducer output signals in MEAS mode



Check that the MEAS LED is lit.



Press the START/STOP Key, to start measuring in MEAS mode.

(1) Checking the measurement data

① Check the display

Perform Step 15.

However, stop the monitoring by pressing the ESC key first when monitoring measurement is in progress.

② Check the printing of the printer

If the print key LED lights up with Step 13, the measurement data will be printed at the same time as when the measurement is taken.

③ Save in a file

If a major measurement is taken when the "SAVE" LED is lit, the file will be saved with the file name "Storage file name.rtm" under the conditions set in Step 10.

Change the load and repeat Step 17.

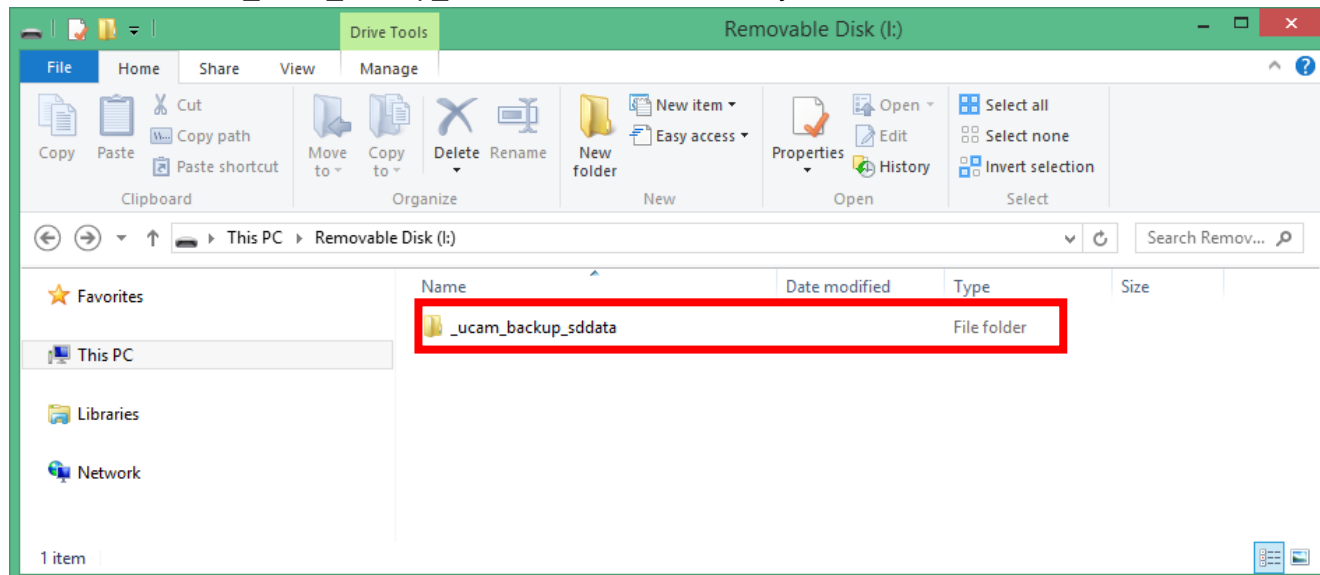
When taking measurements from an unloaded state, start from Step 14.

7. Automatically Collecting Measurement Data by Inserting the USB memory

In the UCAM-60C, it is possible to collect the data in the built-in memory automatically by inserting a USB memory containing the specified folder.

(1) Preparation in a Windows PC

Create the folder 「_ucam_backup_sddata」 in the USB memory



(2) Insert the USB memory into UCAM-60C

Insert the USB memory prepared earlier into the USB port of the UCAM-60C.

Press the **ENTER** key when a short beep sounds 4 times.

When a long beep sounds, copying will start.

The LED on the left of the USB port is lit when copying. Do not pull out USB memory when the LED is lit.

At the end of the copying, another long beep sounds and the LED goes off.

Note

- Use a USB memory with a capacity of 32GB or less.
- Use a USB memory formatted in the FAT32 format.
- Recommended USB memory
(Recommended products)
GH-UFI-XSC2G (capacity 2GB) made by Green house

In addition, a free space of 2GB or more is required to properly collect all the data.

Note

- During data collection, measurement data will be lost if the time to measure the interval and trigger interval is up.
To avoid missing data, either collect the data so that the measurement timings do not overlap or collect the data via a network.
- *The time taken to transfer data to a USB memory is about 3 min for a 1GB file.
- *See the instruction manual for details on how to collect data via a network.

8. Trouble Shooting

In the event that the product does not operate as expected or in a stable manner, you should trace the factor(s) that may be causing such a condition before concluding that the system has failed. Items to be checked and countermeasure against various phenomena are described in the following table. If troubles are not solved despite countermeasures, contact Kyowa or our representatives.

Repairs may be rejected if the product is damaged as a result of not following the instructions given in this instruction manual, or if the product is disassembled or modified by the customer.

Phenomenon	Checked Items and Countermeasures
Power to the main body does not turn on when using AC power. POWER LED does not light up.	• Make sure the AC power outlet has the specified voltage. ⇒ Confirm with a tester etc. • Make sure the power cable is connected correctly. • Make sure the fuse blows out. A spare fuse is enclosed as an accessory. If the fuse blows out, replace it after eliminating the cause.
Power to the main body does not turn on when using DC power. POWER LED does not light up.	• Make sure the DC power supply has the specified voltage. Confirm with a tester etc. • Make sure the power cable is connected correctly. • Make sure the fuse blows out. A spare fuse is enclosed as an accessory. If the fuse blows out, replace it after eliminating the cause.
Operation stops and accepts no instruction at all.	• Make sure the operation failed due to noise. ⇒ Turn off the power and turn on again. Take appropriate countermeasures for removing the noise from the environment, power source, etc. if the phenomenon caused by the noise recur.
The measured value varies.	• Make sure the measuring target (Specimen) and "GND" terminal of the product are grounded correctly. ⇒ Ground them correctly. • Make sure the noise resulted in abnormalities in the operation of the product. ⇒ Take appropriate countermeasures for removing the noise from the environment, power source, etc. • Make sure the input lead wire and cable are connected correctly to the input terminal. ⇒ When the connections to the input terminal (soldering or screw stop) are unstable, the measured value fluctuates. Check the connection and securely connect it.

Strain measurement value is incorrect.	• Do the settings of the measurement function conform to the measurement purpose? ○Original measurement: Coefficient calculation (calibration coefficient calculation) is not performed. The original value of the sum of the initial value of the sensor (initial value unbalance) and the sensor load is measured. The data may also be known as “raw data”. ○MEAS value measurement: Sets whether to perform the coefficient calculation (calibration coefficient calculation) or not. During coefficient calculation, the COEF LED is lit up. By measuring the initial value before loading the sensor, the initial value is deducted. Only the sensor load can be measured. The initial value is saved in a file when the SAVE LED is lit up. ○EASY MEAS measurement: Sets whether to perform the coefficient calculation (calibration coefficient calculation) or not. During coefficient calculation, the COEF LED is lit up. This function is useful when measuring the sensor load → zero value in succession. However, the initial value will not be saved. •Is a sensor which supports remote sensing used? ⇒The sensor input terminals F and G are for TEDS use. When the F and G lines for remote sensing are connected to this, the measured value becomes abnormal. Measurements can be taken normally by cutting lines F and G. •The measured value is 999999 and the LED of the scanning unit does not light up. ⇒Has the measuring CH been set wrongly? Has the dedicated scanning unit been set to “Do not use”? If the LED of the scanning unit does not light up, it means that measurement has not been carried out for the channel of the unit. If the dedicated scanning unit has been set to “Do not use”, channel 0 will be assigned to the external scanner. •See INSTRUCTION MANUAL's "9-1 BV2V" and "9-2 BV5V" to conduct the same bridge excitation voltage check as the measurement mode to see whether the prescribed bridge excitation voltage is being output. ⇒If the bridge excitation voltage is incorrect, it means that the bridge excitation circuit is faulty. Contact Kyowa or our representatives. •See INSTRUCTION MANUAL's "9-3 Input & Output Resistances" to conduct an input & output resistance check to see if it is equal to the resistance of the connected sensor and gauge. ⇒ If the input & output resistance differs from the resistance of the connected sensor and gauge, the sensor and gauge may be faulty. Contact Kyowa or our representatives.
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Voltage measurement value is incorrect.	•Is the Delta V function enabled and the initial value is an abnormal value? ⇒Voltage and temperature are basically original values (raw data) that do not calculate the calibration coefficient or subtract the initial value. However, by enabling the deltaV or deltaT function, it becomes possible to measure with the measure value where coefficient calculation was performed. •Is a FV-1A and FV-2A sold by KYOWA used? Can not use the FV-1A and FV-2A to the UCAM-60.
The measured value of thermocouple is incorrect.	•See INSTRUCTION MANUAL's "9-5 Terminal Temperature" to conduct a terminal temperature check to see whether the result is almost the same as the surrounding temperature. (Since the UCAM main body generates heat by itself, the temperature displayed is higher than the ambient temperature by several °C.) ⇒ If the result is incorrect, it means that the terminal temperature measurement element is faulty. Contact Kyowa or our representatives. • See INSTRUCTION MANUAL's "9-7 Burnout" to conduct a burnout check. ⇒If the result is NG, it means that the thermocouple is disconnected.
The measured value of a sensor used for a long time in the field is unstable e.g. strain gauge civil engineering transducer, etc.	•See INSTRUCTION MANUAL's "9-8 Insulation" to conduct an insulation check. ⇒If the result is NG, or if the measured insulation resistance is lower than the value prescribed for the sensor, it means that the insulation of the sensor has dropped and the measured value has become unstable due to the penetration of moisture. Replacement of the sensor is recommended but if it cannot be helped, the measured value may appear to stabilize by slowing the scanning speed.



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