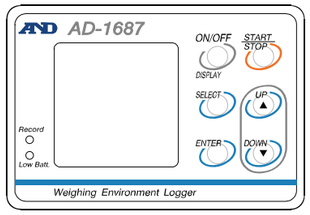
AD-1687

Weighing Environment Logger

Instruction Manual



A&D Company, Limited

1WMPD4002436A

Safety Use

When operating this instrument, be sure to observe the following:

⚠Caution

- Do not open the case to repair the AD-1687. Only qualified personnel can do that. Attempting repairs yourself may cause damage to the AD-1687. Damage caused by attempting to do the repair yourself will void the warranty.

Caution During Use

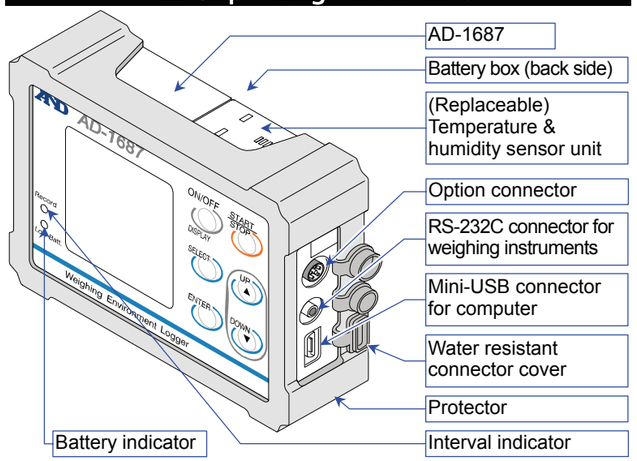
⚠Caution

- With the cap attached over the battery cover, connector cover, sensor connector cover, the AD-1687 is protected against water splashing (equivalent to IP65). Please note that it will not endure immersion in water or high pressure running water.

1. Introduction

This manual describes how the AD-1687 works and how to get the most out of it in terms of performance. Please read this manual completely before using the AD-1687.
This device conforms to FCC rules and EMC directive for CE mark.

2. Unpacking and Names



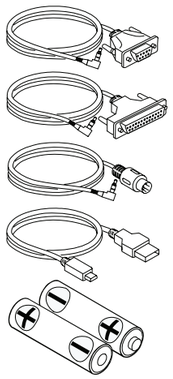
RS-232C cable for weighing instruments

①	D-Sub 9pin,	1 m	AX-KO3571-100
②	D-Sub 25pin,	1 m	AX-KO3572-100
③	Din 7pin,	1 m	AX-KO3573-100

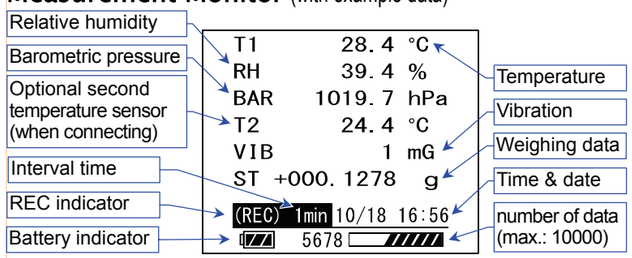
USB cable
mini USB – type B, 1 m

Two batteries for temporary use. Size: R6 (AA).

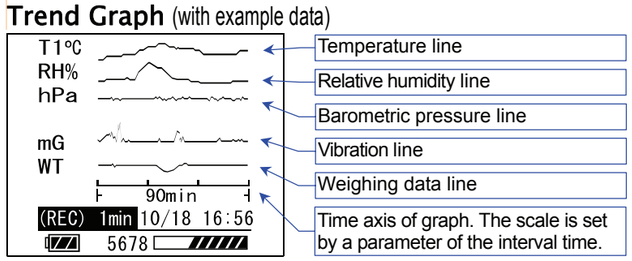
This instruction manual



Measurement Monitor (with example data)



Trend Graph (with example data)



3. Features

- The AD-1687 is a data logger equipped with 4 sensors for temperature, humidity, barometric pressure and vibration. The AD-1687 can measure and store environmental data, while at the same time, using the interval measurement independently.
- The AD-1687 can store environmental data along with weighing data when connected to the RS-232C interface of a weighing instrument. Therefore, it is possible to store data in an environment where a computer can not be used.
- The AD-1687 has a built-in clock. This allows the date and time to be stored along with data.
- A maximum of 10000 sets of environmental data and weighing data can be stored.
- The data is stored in CSV format and can easily be used by software such as a spreadsheet application.
- The stored data can be read to a computer, after the AD-1687 is recognized as USB memory, without special software.
- The AD-1687 can transmit environment data to the application in the computer (Ex: EXCEL, etc) using the USB interface continuously.
  (The real time transmission mode)
- At least, when connecting any combination of the weighing instrument or computer, the power is supplied for the AD-1687 from them. In this case, AD-1687 batteries are not consumed.

4. Key Operations

Key	*Press* : Press and release the key immediately.	*Long press* : Press and hold the key for 1 second.
ON/OFF (DISPLAY)	Shows the current monitor.*1 Cancels the setting operation.	Turns on or off the AD-1687. *2
START/STOP	Starts the interval measurement. Cancels the setting operation.	Stops the interval measurement.
SELECT	Changes the current display.	——
ENTER	Sets or stores them.	
▲UP,▼DOWN	Changes the parameter.	

*1: In the interval measurement, during the current monitor data is hidden.
*2: The AD-1687 is not turned off in interval measurement while the power is supplied by them except batteries.

5. Functions And Use

Self Measurement With The Interval Measurement And Environment Monitor

- ***Environment monitor***: The AD-1687 can measure and store data of four environment sensors at the same time independently.

Connecting To The Weighing Instrument

- ***Management of the weighing***: The AD-1687 can store the weighing data and environment data at the same time.
- The power is supplied from the RS-232C interface.

Connecting To The Computer

- Data transmission to the computer.
  - ☐ The AD-1687 can be recognized as USB memory. The computer can receive the CSV file from the AD-1687.
  - ☐ The real time transmission mode can transmit each data of the CSV format to the computer.
- The power is supplied from the USB port.

6. Self Measurement

With The Interval Measurement And Environment Monitor

1 Turns on the AD-1687.

ON/OFF key, *Long press* ····· Press and hold the key for 1 second to turn on the AD-1687.

2 Operate the environment data with the following keys

SELECT key ····· Changes a current monitor.
START/STOP key, *Press* ··· Starts the interval measurement. The indicator REC is shown.
START/STOP key, *Long press* ··· Stops the interval measurement. The indicator REC is hidden.
ON/OFF key, *Long press* ····· Turns off the AD-1687 (during the interval measurement except battery power).

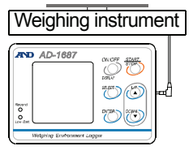
Cautions

- To suppress the battery consumption.
  - ☐ The current monitor will be hidden after no operation for 1 minute in the interval measurement. (The current measurement is continued.) When pressing the ON/OFF (DISPLAY) key, the monitor are shown for 1 minute.
  - ☐ When stopping the interval measurement, the AD-1687 is turned off after no operation for 1minute.
- The time to show or hide the monitor can be specified at the parameter "POWER SAVE" in the function table.
- The AD-1687 will turn off automatically when reaching full memory and storing the parameter "ONE-TIME" at the item "RECORDING TYPE" in the "FUNCTION".
- The temperature & humidity sensor unit is a consumable. (Replacement is approx 2 years each.)

7. Connecting To The Weighing Instrument

7.1. Recording The Weighing Data And Environment Data At The Same Time (Management Of The Weighing)

1 Turn off the AD-1687 and connect the RS-232C cable. The AD-1687 will be turned on automatically with the RS-232C power supply.



2 Press the data output key (Ex.: PRINT key) of the weighing instrument to transmit data. The AD-1687 receives data and the indicator REC is shown for 1 second.

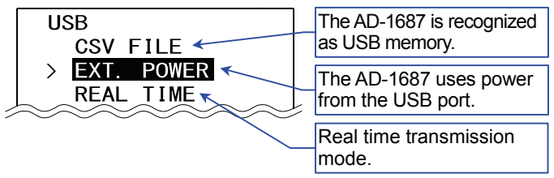
3 Stored data is shown for 5 seconds in the measurement monitor.

8. Connecting To The Computer

8.1. Supplying The Power From USB Port Of Computer

1 Connect the AD-1687 to the USB port of the computer.

2 Select the item "EXT.POWER" and press the ENTER key so that the AD-1687 can use power from the USB port.



 (Continue to the reverse side)

8.2. Transmitting the CSV File Data

1 Connect the AD-1687 to the USB port of the computer. Select "CSV FILE" and press the ENTER key.

2 The AD-1687 is recognized as USB memory without special software.

3 The CSV file data can read with the computer.

4 When deleting the CSV file in the AD-1687, Delete it with normal file operation in the computer.

5 Perform the menu "Safely Remove Hardware" when removing the AD-1687 from the USB port of the computer.

Caution

- **The file operation on the computer is able to read (copy & delete) the file in the AD1687 only.**
- **Can not save or edit the data in the AD-1687 with the file operation on the computer.**

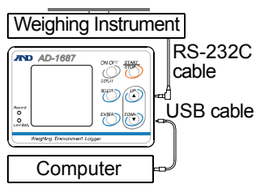
8.3. Transmitting Data With The Real Time Transmission Mode

The way of transmitting the environment data and weighing data to the computer with the USB port. Data is not stored in the AD-1687. (Special software is not necessary)

8.3.1. Preparations

1 Connect the AD-1687 and computer with a USB cable.

2 Select the item "REAL TIME" and press the ENTER key to use the real time transmission mode.



3 When transmitting the environment data and weighing data, connect the weighing instrument to the RS-232C interface with the AD-1687 power turning off. And then re-connect the AD-1687 and computer with the USB cable.

8.3.2. Transmitting Environment Data

1 Click on the position on the application (EXCEL etc.) to receive data.

2 Press and hold (*Long press*) the START/STOP key to transmit environment data.

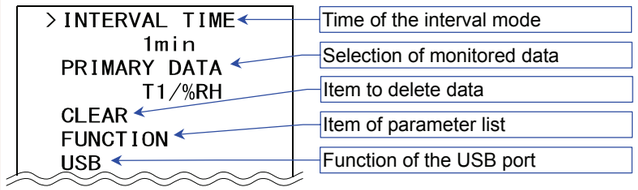
8.3.1. Transmitting Weighing Data And Environmental Data

1 Click on the position on the application (EXCEL etc.) to receive data.

2 When pressing the output key (Ex.: PRINT key) of the weighing instrument, the AD-1687 receives the weighing data, sounds the buzzer and transmits the weighing data and environment data to the computer.

3 Data is displayed for 5 seconds on the measurement monitor.

9. Management of Items



1 **Display the menu.**
SELECT key ····· Press this key several times to display the menu.

2 **Enter to an item of the menu.**
▲UP, ▼DOWN key ····· Select an item.
ENTER key ····· Enters into the item.

3 **Specify a parameter for the current item.**
▲UP, ▼DOWN key ····· Select a parameter.
ENTER key ····· Stores new parameter and proceeds to next item.
START / STOP key ····· Cancels and proceeds to next item or menu.

4 **Operations after finishing the management.**
SELECT key ····· Selects a display of the current measurement, graph or menu.
START/STOP key, *Short press* ····· Starts measurement of the interval measurement.
START/STOP key, *Long press* ····· Stops measurement of the interval measurement.

Caution

- **Selectable items will change depending on operating conditions.**

9.1. INTERVAL TIME

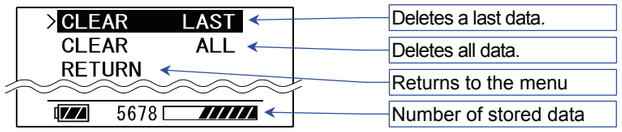
Specify an interval time of measurement with the interval measurement. This is the same as item "INTERVAL TIME" of the "FUNCTION".

9.2. PRIMARY DATA

Specify data displayed with big font in the environment data. This is the same as item "PRIMARY DATA" of the "FUNCTION".

9.3. CLEAR

The AD-1687 can delete stored data with the following keys.
▲UP, ▼DOWN key ····· Selects a method.
ENTER key ····· performs selected item.



9.5. FUNCTION (Function Table)

The function table can specify each action of the function and the communication of the AD-1687. Items of each function are stored as a parameter. These parameters are stored in the AD-1687 even without power.

Item		Parameter And Detail
INTERVAL TIME		1, 2, 5, 10, 15, 20, 30 seconds, 1*, 2, 5, 10, 15, 20, 30, 60 minutes
PRIMARY DATA		T1* ····· Temperature %RH* ····· Humidity BAR ····· Barometric pressure VIB ····· Vibration WT ····· Weighing data
TEMP.UNIT		°C* ····· Celsius °F ····· Fahrenheit
RECORDING TYPE		ONE-TIME* ····· Stops at full memory ENDLESS ····· Overwrites at full memory
BUZZER		OFF ····· Not sounded ON* ····· Sounds buzzer
DECIMAL POINT		.* ····· dot , ····· comma
Balance Settings	BAUD RATE	600, 1200, 2400*, 4800, 9600, 19200 bps
	BITS PARITY	7 bits / EVEN*, 7 bits / ODD, 8 bits / NONE
	TERMINATOR	CR LF* CR
POWER SAVE		OFF, 30 seconds, 1*, 2, 5, 10 minutes
DATE FORM		yyyy/mm/dd*, mm/dd/yyyy, dd/mm/yyyy year:yyyy, month:mm, day:dd
DATE SETTING		Example: 2011 / 12 / 31
TIME SETTING		Example: 13 : 15 : 30
ID NUMBER		8-digit numbers. Example: LAB-1234
CONTRAST		25 to 40* to 50
RETURN		Returns to the menu

*: Factory settings

9.4. USB

This menu selects the function when connecting the AD-1687 and computer with a USB cable. Refer to "**8. Connecting To The Computer**" for details.

10. Replacement for Batteries and Sensor Unit

Caution

- Replace with two new alkaline batteries of the same type (LR6) and maker when indicating ▭ (Low battery mark).
- Insert each battery with its positive (+) and negative (–) terminals properly aligned with the corresponding symbols in the battery compartment.
- Do not mix an old battery with a new battery. It may cause damage to the scale or shorten the battery life.
- When the batteries are drained completely, ▭ (Low battery mark) does not appear.
- The battery life is dependant upon the environmental temperature, battery type and usage.
- Remove the batteries if the device is not to be used for a long time. The batteries may leak and cause a malfunction.
- Accessory battery life may be short for temporary use.
- The temperature & humidity sensor unit is a consumable. (Replacement is approx 2 years each.)

1 Turn off the AD-1687. Remove the protector.

2 Push the side of the cover to release hook and open the cover.

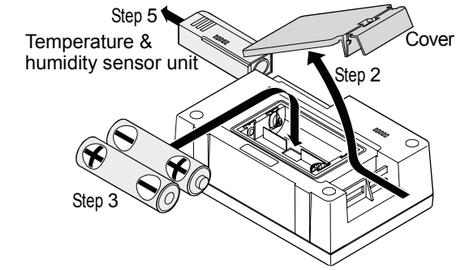
3 Insert two new batteries with the positive (+) and negative (–) terminals properly aligned with the corresponding symbols in the battery compartment.

4 Close the cover.

5 In case of replacing the temperature & humidity sensor unit, slide it out and replace with new one.

Battery Indicator

▰ Enough remaining battery.
▭ Batteries are low. Recommend replacing them.
▭ Batteries are drained. Replace them with new ones.



11. Specifications

Instruments for connection to the AD-1687
A weighing instrument equipped with an RS-232C interface. Refer to A&D homepage.

Data capacity
Maximum 10000 sets (Including date & time)

Sensors

	Resolution	Range	Accuracy
Temperature	0.1 °C	0 to 60 °C	±0.5 °C (20 to 30°C)
Relative humidity	0.1 % RH	0 to 100 %	±3 % (20 to 80%)
Barometric pressure	0.1 hPa	500 to 1100 hPa	±3 hPa (0 to 60°C)
Vibration	1 mG	0 to 2000 mG	±20 % Static acceleration

【Refer to A&D homepage for details of AD-1687. http://www.aandd.jp】

Interval time
1, 2, 5, 10, 15, 20, 30 seconds,
1, 2, 5, 10, 15, 20, 30, 60 minutes

Power supply
Two alkaline batteries (LR6, AA), RS232C or USB

Battery life
Approx. 6 month
(Measurement interval: 1 minute, alkaline batteries)

Clock accuracy
Max. ±1 minute/month

Adaptable Operating systems
Windows 2000 / XP / Vista / 7 (32 bits/64 bits)

Operating environment
0 °C to 60 °C, 85 % RH or less (No condensation)

Dimensions
89×127×36 mm (including the protector)

Mass Approx. 255 g (including batteries and protector)