# AD-1688

## Weighing Data Logger

## Instruction Manual

The contents of this manual and the specifications of the instrument covered by this manual are subject to change for improvement without notice.

**A&D**
A&D Company, Ltd.

1WMPD4001957E

### Using the AD-1688

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

⚠ Caution

- Do not open the case to repair the AD-1688. Only qualified personnel can do that. Attempting repairs yourself may cause damage to the AD-1688. Damage caused by attempting to do the repair yourself will void the warranty.

### Precautions on Usage

⚠ Caution

- With the cap attached over the connectors, the AD-1688 is protected against water splashing (equivalent to IP65). Please note that it will not endure immersion in water or high pressure running water.
- The AD-1688 is supplied power and is turned on only when it is connected to a weighing instrument or the USB of a personal computer.
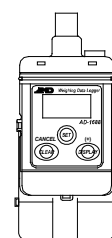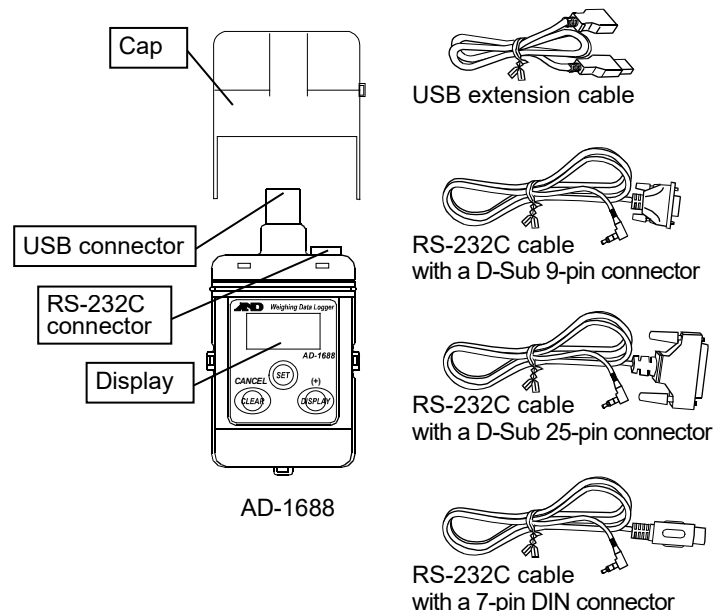
### 1. Introduction

This manual describes how the AD-1688 works and how to get the most out of it in terms of performance. Please read this manual completely before using the AD-1688.
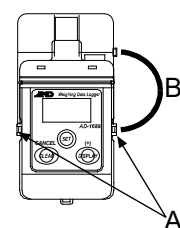
### 2. Unpacking

When unpacking, confirm that everything is included.

- AD-1688 Weighing Data Logger
- USB extension cable (0.5 m)
- RS-232C cable with a D-Sub 9-pin connector (1 m)  : AX-KO3571-100
- RS-232C cable with a D-Sub 25-pin connector (1 m) : AX-KO3572-100
- RS-232C cable with a 7-pin DIN connector (1 m)  : AX-KO3573-100
- Instruction manual (this document)



Cap

USB extension cable

USB connector

RS-232C connector

Display

AD-1688

RS-232C cable with a D-Sub 9-pin connector

RS-232C cable with a D-Sub 25-pin connector

RS-232C cable with a 7-pin DIN connector

When the AD-1688 is in use, the cap can be attached on the bottom.

Each side has an opening. Use the openings as follows.

**A:** Attach a strap to carry.
**B:** Connect the cap and the main unit so that the cap will not be lost.

### 3. Features

- When connected to the RS-232C interface of a weighing instrument, the AD-1688 can store the data that the weighing instrument outputs. Thus, storing weighing data is possible in an environment where a personal computer cannot be used.
- The AD-1688 has an internal clock. This allows the date and time to be stored, along with the weighing data.
- The maximum data to be stored is approximately 5000, using the A&D standard format (15 characters in 1 data set).
- The stored data can be read to a personal computer using USB. As the AD-1688 is recognized as USB memory, special software is not required to read the data.
- The data is stored in CSV format and can be used easily by software such as EXCEL.

- As power is supplied to the AD-1688 from the weighing instrument or USB, no special power source is required.

**Note:** The AD-1688 is supplied power and is turned on only when it is connected to a weighing instrument or the USB of a personal computer.

### 4. Key Operations

| Key | When pressed (To press and release immediately) | When pressed and held (To keep pressing for 2 seconds or more) |
|---|---|---|
| SET | Displays the date and time. | Displays the function setting menus. |
| DISPLAY (+) | Switches between the display of data number and memory utilization rate. | Starts or stops data storage at a set interval. (Only in the interval mode) |
| CLEAR (CANCEL) | None | Enters the data deletion mode. |

### 5. Setting the Date/Time

**Note:** The date and time were set to the Japanese standard time at the factory when shipped. Before use, set the date and time to your local time.

1. Connect the AD-1688 to a weighing instrument using the RS-232C cable.
   **Insert the type L connector to the AD-1688 firmly until it clicks.**

2. Refer to "8.2. Date/Time Display" to display the date and time.
   When the year, date or time is displayed, press and hold the SET key for 2 seconds or more. The display flashes and the AD-1688 enters the setting mode.

   Using the following keys to set the date and time.
   DISPLAY (+) key:          Increases the value by one
   CLEAR (CANCEL) key:   Decreases the value by one

   When the above keys are pressed and held, the value increases or decreases continuously.

   SET key:                Confirms the setting and goes to the next item.

3. After setting the year, month, day, hour and minute, press the SET key to return to the data number display.
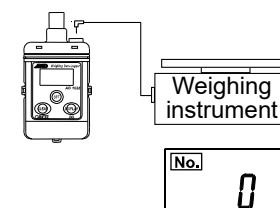
### 6. Storing the Weighing Data

#### 6.1. Basic Operation

1. Connect the AD-1688 to a weighing instrument using the RS-232C cable.

**Note:** When the weighing instrument and a personal computer are connected simultaneously, communication with the computer has priority. Data storage will not be performed.
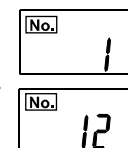   : Use the cable appropriate to the RS-232C connector of the weighing instrument.

When the cable is connected, power is supplied to the AD-1688 and the weighing data number appears.



Weighing instrument

No. 0

2. Press the PRINT key of the weighing instrument to transmit the data to the AD-1688.
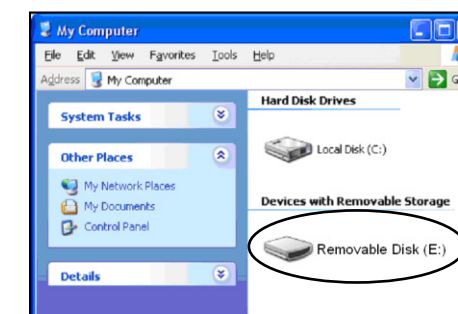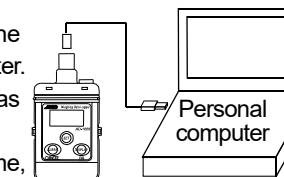
   When the data is stored in the AD-1688, a buzzer sounds and the data number increases.
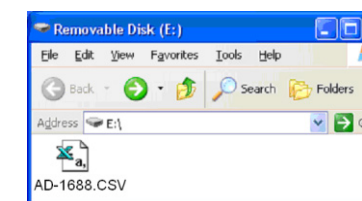
   No. 1

3. Repeat step 2 as necessary.

   No. 12

4. When the number of data necessary is stored, disconnect the AD-1688 from the weighing instrument.
   The display of the AD-1688 turns off.

**Note:** During the data storage operation, do not remove the RS-232C cable.

5. Connect the AD-1688 to the USB port of a personal computer.
   Use the USB extension cable as necessary.
   When connected for the first time, a driver is installed automatically.
   The AD-1688 is recognized as a removable disk.
   No special software is required.



6. Open the removable disk using Windows explorer.
   The data is stored in a file named "AD-1688.csv".
   Copy this file into the personal computer to use.



An example of the data opened using EXCEL is shown below.



**Note:** ###### may appear in column B.
   To display the date, broaden the column width.

7. After copied, delete the "AD-1688.csv" file from the AD-1688 if necessary. Deleting unnecessary data individually is also possible.

From the front

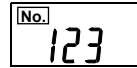## 7. Deleting the Weighing Data

**Note: The AD-1688 performs as follows only when connected to a weighing instrument.**

Two ways of deleting data are available; deleting the most recent data (or data with the most recent number) or all the data. Use this to delete the incorrect data.

1. Data number display
   Connect the AD-1688 to a weighing instrument using the RS-232C cable.
   When the data number appears, press and hold the CLEAR key for 2 seconds or more.

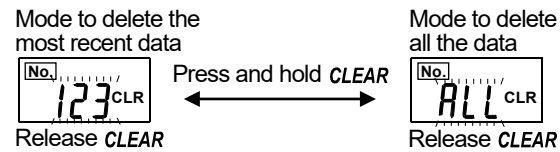   | No. |
   | 123 |
   Press and hold *CLEAR*

2. Selecting a deletion mode.
   The "CLR" segment turns on and the most recent data number flashes.
   Under the above condition: Release the CLEAR key to enter the mode to delete the most recent data.
   Keep pressing the CLEAR key to display "ALL". Release the CLEAR key here to enter the mode to delete all the data.
   If the CLEAR key is pressed and held, the display indicates the most recent data number and "ALL" alternately.

   | Mode to delete the most recent data | Mode to delete all the data |
   | No. 123 CLR | No. ALL CLR |
   | Release *CLEAR* | Release *CLEAR* |
   Press and hold *CLEAR*

3. Deleting the data
   Press the SET key to delete the designated data. The display indicates the reduced data number.
   If the SET key is not pressed within 5 seconds, the AD-1688 returns to the data number display without deleting the data.
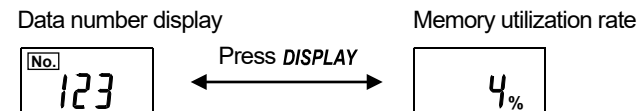
   | Press *SET* | Press *SET* |
   | No. 122 | No. 0 |

## 8. Switching the Displays

### 8.1. Memory Utilization Rate

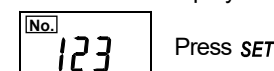When the data number is displayed, press the DISPLAY key to display the memory utilization rate.
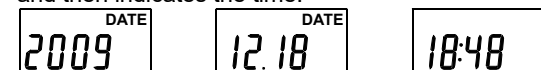Press the DISPLAY key again to display the data number.

| Data number display | Memory utilization rate |
| No. 123 | 4% |
Press *DISPLAY*

### 8.2. Date/Time Display

When the data number is displayed, press the SET key to display the year, date and time.

1. Data number display
   | No. 123 |   Press *SET*

2. The display indicates the year and date for 2 seconds each, and then indicates the time.

   | DATE 2009 | DATE 12.18 | 18:48 |

3. Press any key to return to the data number display.

-4-

## 9. Function Settings

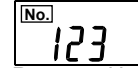In the function setting mode, settings of the AD-1688 performance and communication can be changed.
Each function has parameters. By changing the parameter, specify the performance of the function.
The set parameters are maintained in memory even if the AD-1688 is disconnected from the weighing instrument or personal computer.

### 9.1. Setting Procedure

1. Connect the AD-1688 to a weighing instrument using the RS-232C cable.

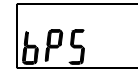2. When the data number appears, press and hold the SET key for 2 seconds or more.
   | No. 123 |
   Press and hold *SET*

3. The function display appears. (Refer to "9.2. Function List".)
   Press the DISPLAY key to select a function, and press the SET key to display the parameters.
   When the CLEAR key is pressed, or after 10 seconds of non operation, the AD-1688 returns to the data number display.
   | bPS |
   Press *SET*

4. The parameter of the selected function appears. The current setting has the ► mark at the lower right. The flashing parameter can be changed.
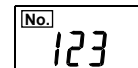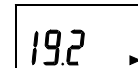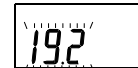   | 2400 ► |
   Current setting

5. Using the following keys to change the parameter.
   DISPLAY (+) key: Displays the parameters one by one.
   CLEAR (CANCEL) key: Goes to the next function without changes.
   SET key: Confirms the setting and goes to the next function.

   After changes, the parameter and the ► mark appear for 1 second, and then the next function appears.
   | 192 |
   | 192 ► |
   | btPr |

6. Press the CLEAR key to return to the data number display.
   | No. 123 |

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-5-

### 9.2. Function List

| Function | | Description | | |
|---|---|---|---|---|
| Baud rate<br>bPS | Parameter | 600, 1200, 2400*, 4800, 9600, 19200 bps<br>600 | 2400 ► | 192 |
| Data bit, parity<br>btPr | Parameter | 7bit-Even*, 7bit-Odd, 8bit-None<br>7-E ► | 7-o | 8-n |
| Decimal point (Note1)<br>dP | Parameter | Dot (.)*, Comma (,)<br>dot ► | Co | |
| Number of data on a line<br>L inE | Parameter | 1*,2, 3, 4, 5, 6, 7<br>1 ► | 2 | |
| Buzzer<br>bEEP | Parameter | Sounds the buzzer*, Does not sound<br>on ► | oFF | |
| Data storage mode<br>rEC | Parameter | Standard mode (All data)*, Interval mode<br>ALL ► | int<br>When the interval mode is selected | |
| Interval time | Parameter | 1*,2,5,10,15,20,30,60,120,300,600,900,1200,1800,3600<br>1 SEC ► | 60 SEC | |
| Date and time data<br>DATE SEC<br>Add | Parameter | Adds the date and time*, Does not add<br>DATE SEC on ► | DATE SEC oFF | |
| Date format (Note1)<br>DATE<br>ordr | Parameter | YMD*, MDY, DMY<br>DATE Ynd ► | DATE ndY | DATE dnY |

(Note1) Set these functions according to the settings of the personal computer used.
∗ : Factory setting
About the number of data on a line and the interval mode, refer to the following sections.

### 9.3. Number of Data on a Line

This function is useful for storing data with different contents or items at the same time, for example, ID and number of samples in a counting scale. When the number is set, <CR>s of up to the setting are converted into commas. Once the number of <CR>s is reached the setting, a new line starts.
For example, the ID, number of samples and weight are sent individually. Using this function, these three data items can be placed on one line as shown in (B).

Example data received to transmit to Excel
    ID,000123<CR><LF>
    QT,+00000056 PC<CR><LF>
    ST,+0003.102  g<CR><LF>

(A) When the number of data on a line is 1, the ID, number of samples and weight are stored on separate lines.



(B) When the number of data on a line is 3, the ID, number of samples and weight are stored on one line.



Samples    ID    Number    Weight

-6-

## 10. Interval Mode

- In the interval mode, the weighing data is stored at a certain interval.
- Available intervals are:
  1, 2, 5, 10, 15, 20, 30 seconds / 1, 2, 5, 10, 15, 30 minutes / 1 hour

1. Connect the AD-1688 to a weighing instrument using the RS-232C cable.
   | rEC |

2. Select the interval mode ( int ) for the data storage mode ( rEC ) of the function setting and set the interval time (120 seconds in the example). Press the CLEAR key to display the data number. In the interval mode, the ► mark turns on at the lower right.
   | int |
   | 120 SEC ► |
   | No. 124 ► |

3. Set the data output mode of the weighing instrument to the stream mode. For details on the setting procedure, refer to the instruction manual of the weighing instrument.

4. Press and hold the DISPLAY key for 2 seconds or more. The AD-1688 starts to store the data at a set interval. The ► mark flashes while the data is being stored.
   | No. 124 ▸ |

5. To stop storing the data, press and hold the DISPLAY key. The ► mark stops flashing and turns on.
   | No. 145 ► |

6. Remove the AD-1688 from the weighing instrument.

7. Connect the AD-1688 to a personal computer and read the stored data.

## 11. Error Display

| Error | Description | Remedy |
|---|---|---|
| FULL | Data full.<br>No more storage is available. | Delete the data. |
| Err 123<br>Errors 1 to 3 | The voltage that is supplied from the weighing instrument is low. | Use a longer interval time to store the data. |
| Err 7<br>Error 7 | The RS-232C cable is not connected correctly. | Insert the type L connector to the AD-1688 firmly until it clicks |
| | The baud rate and parity of the received data is different from the set values. | Set the same values for both the AD-1688 and the weighing instrument. |
| Err 9<br>Error 9 | Internal clock error such as low backup battery | Ask for repair. |

## 12. Specifications

| | |
|---|---|
| Devices to be connected | Balances and scales with an RS-232C connector manufactured by A&D (Visit our website to determine which devices are applicable.) |
| Number of data to be stored | Approximately 5000 data in the standard format (15 characters in 1 data set). |
| Clock error | ±1 minute / month |
| Applicable OS | Windows2000/XP/Vista/7/8/10/11 |
| Dedicated power supply | Not required<br>Power is supplied from a weighing instrument or a personal computer. |
| Operating temperature | 5°C to 40°C |
| Operating humidity | 85%RH or less, no condensation |
| Dimensions | 55x103x16.5 mm |
| Mass | Approximately 60 g |

-7-