AD-8118C

Universal Printer

INSTRUCTION MANUAL

A&D Company, Limited

1WMPD4001446

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

CONTENTS

1. INTRODUCTION

The AD-8118C Universal Printer is designed primarily for use with A&D weighing indicators, scales and electronic balances.

Before using your printer, please read this manual to gain an understanding of its functions and correct use. After reading, keep this manual at hand so that you can refer to it whenever necessary.

1-1 Features

The AD-8118C Universal Printer has the following features.

- □ Dot impact mechanism allows long-term storage of printed data.
- □ Calendar/clock function. Date and time may be printed.
- □ Cumulative total function and statistical calculation function by code and input channel.
- □ Lithium battery provides cumulative total memory and calendar/clock backup without AC power for approximately 10 years (with power off).
- □ Serial input is either RS-232C or current loop. Current loop input allows connection to remote devices (about 100m).
- □ Interval function performs printing at set times
- □ Programmable printing format
- □ Inputs can be expanded up to 4 channels by adding an option board AD-8118C-02 so that the data of four scales can be printed with one printer.
- □ The same external dimensions, connectors and functions with the AD-8118A/B. Thus, replacement with an AD-8118C is possible by setting the internal setting contents the same as the AD-8118A/B.
- □ The optional paper winder, AD-8118C-10, allows easier management of the printer paper.

1-2 Compliance with FCC Rules

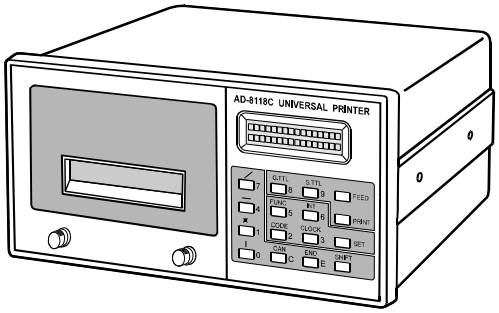
Please note that this equipment generates, uses and can radiate radio frequency energy. This equipment has been tested and has been found to comply with the limits of a Class A computing device pursuant to Subpart J of Part 15 of FCC rules. These rules are designed to provide reasonable protection against interference when the equipment is operated in a commercial environment. If this unit is operated in a residential area it may cause some interference and under these circumstances the user would be required to take, at his own expense, whatever measures are necessary to eliminate the interference.

(FCC = Federal Communications Commission in the U.S.A.)

1-3 Unpacking

When unpacking, check that all of the following items are included.

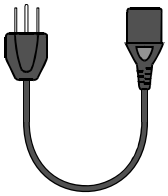
AC-8118C Universal Printer 1 unit



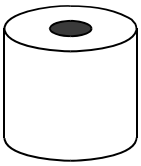
Accessories

- AC power cord 1 (1KO115 2.4 m)
- Grounded AC plug adapter 1 (1ET9102)
- Printing paper 1 (1PP137)
- Ink ribbon 1 (ERC-09 EPSON)
- Shaft 1 (105A46423)
- I/O connector 1 (FCN361J024, FCN360C024-B FUJITU)
- 7-pin DIN connector 1 (TCP0576-715267 HOSIDEN)
- 5-pin DIN connector 1 (TCP0556-715267 HOSIDEN) **Insert the DIN connector into the "OP-10.OUT" when the AD-8118C-10 is <u>not</u> used.**
- Rubber feet 4
- Instruction Manual 1

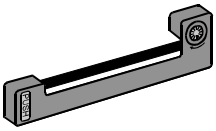
AC power cord



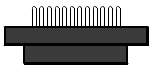
Printing paper



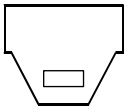
Ink ribbon



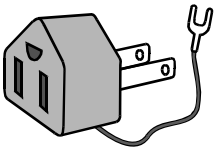
FCN connector



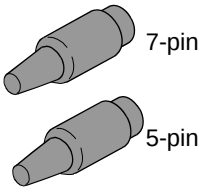
FCN connector case



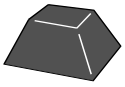
Grounded AC plug adapter



DIN connectors

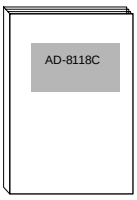


Rubber foot



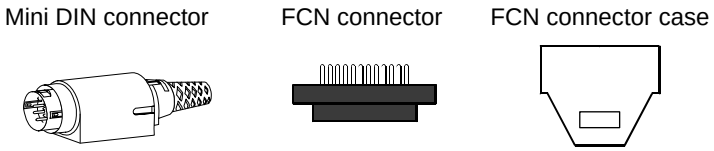
Shaft

Instruction manual



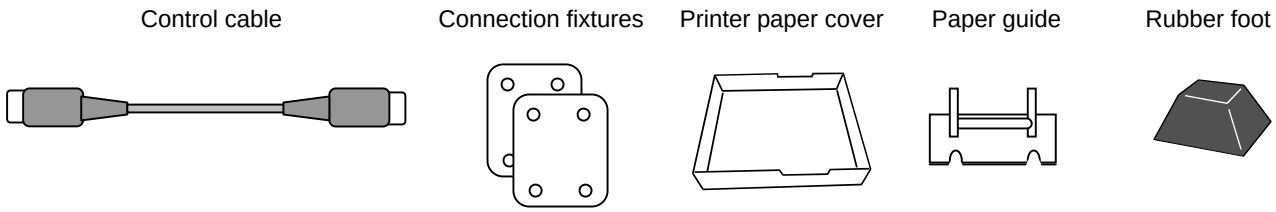
AD-8118C-02 Expansion Input Option Board

- I/O connector 1 (FCN361J024, FCN360C024-B FUJITU)
- Mini DIN connector 3 (TCP6150 HOSIDEN)



AD-8118C-10 Paper Winder

- Control cable 1 (1KO3228 Approximately 30 cm)
- Connection fixture 2 (M3 pan head screw 2, Hand-tightening screw 2)
- Printer paper cover 1
- Paper guide 1
- Rubber feet 4



Note: The illustration is not to scale.

2. SPECIFICATIONS

2-1 General Specifications

AD-8118C Universal Printer

(1) Power supply	85 VAC to 264 VAC, 50/60Hz
	Caution: Do not use with a three-phase power source.
(2) Power consumption	Approx. 17 VA with AD-8118C-02 installed
	Approx. 20 VA with AD-8118C-02 and AD-8118C-10 installed
(3) Operating temperature range	0°C to 40°C
(4) Operating humidity	80%RH or less (Non-condensing)
(5) External dimensions	192 (W) x 185 (D) x 96 (H) mm
(6) Panel cutout dimensions	186 (+1.0, -0) x 92 (+0.8, -0) mm
(7) Mass	2.4 kg with AD-8118C-02 installed
(8) LCD	16 columns, 2 lines (Character width 2.15 x height 4.35 mm)

AD-8118C-02 Expansion Input Option Board

(1) RS-232C/Current loop (2 to 4 channels (CH), to be switched by rewiring the connector)

(2) Control I/O (Open collector)

AD-8118C-10 Paper Winder

(1) Power supply	Supplied from the printer via the 1KO3228 control cable provided.
(2) Power consumption	Approx. 20 VA with AD-8118C-02 and AD-8118C-10 installed
(3) Operating temperature range	0°C to 40°C
(4) Operating humidity	80%RH or less (Non-condensing)
(5) External dimensions	192 (W) x 185 (D) x 120 (H) mm
(6) Panel cutout dimensions	183 (+1.0, -0) x 115 (+0.8, -0) mm
(7) Mass	2.2 kg

2-2 Input Specifications

AD-8118C Universal Printer

(1) Method	RS-232C or current loop (Input selector switch on the real panel)
(2) Baud rate (F1 setting)	RS-232C: 600 bps to 38.2 kbps, Current loop: 600 bps to 2400 bps
(3) Data bits	7/8 bits (Switchable by F2 only for CH1)
(4) Parity bit	1 bit (EVEN)/None (Automatic switch to EVEN when data bits are 7, and to none when data bits are 8.)
(5) Stop bit	1 bit
(6) Codes used	ASCII or JIS

AD-8118C-02 Expansion Input Option Board

(1) Method	RS-232C or current loop (To be switched by rewiring the connector)
(2) Baud rate (F1 setting)	RS-232C: 600 bps to 38.2 kbps, Current loop: 600 bps to 2400 bps
(3) Data bits	7 bits (fixed)
(4) Parity bit	1 bit EVEN (fixed)
(5) Stop bit	1 bit
(6) Codes used	ASCII or JIS

2-3 Printer Specifications

Printer

(1) Printing system	Dot matrix impact printer
(2) Printing width	24 columns/line for 5x7 dots character (Standard character) 12 columns/line for 10x7 dots character (Enlarged character)
(3) Character size	1.7 (W) x 2.6 (H) mm (Standard character) 3.4 (W) x 2.6 (H) mm (Enlarged character)
(4) Printing speed	Approximately 1.7 lines/second (Internal processing time excluded)
(5) Reliability	Approximately 1,000,000 lines

Ink ribbon

(1) Character color	Black
(2) Life	Approximately 200,000 characters (varies depending on the environment)

To purchase ink ribbons, order using the model number AX-ERC-09-S (5 pieces).

Printer paper

(1) Size	57.5 (W) x 60 (D) mm
(2) Length	Approximately 30 m (A red ending mark appears approximately 1 m before the end)
(3) Number of printing lines	Approximately 8,000 lines

To purchase printer paper, order using the model number AX-PP137-S (10 rolls).

3. PRECAUTIONS

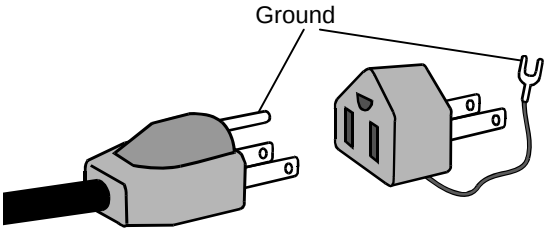
The printer is a precision electronic device. Handle it with much care.

3-1 Installation

- The operating temperature range is 0°C to 40°C.
  Do not install the printer in direct sunlight.
- As the printer and the paper winder are not sealed, do not use them where dust is prevalent. If conductive substances get inside the printer or the paper winder, they may cause the printer or the paper winder to malfunction..
- Do not subject to strong vibration.
- Do not expose the printer to excessive noise or static electricity as that may cause the printer to malfunction.

3-2 Connection of Power Supply/Ground

- Ground the printer to the rear terminal of your scale or balance. Do not plug it in directly to any other equipment. Do not use it commonly with power devices.
- The power supply operates from 85 VAC to 264 VAC. Do not use with a three-phase power source. Use a stable power supply free from instantaneous dropout or noise. Do not use a common source for the power lines.



AC power cord Grounded AC plug adapter

3-3 Power-Up Procedure

When the printer is connected to other devices, turn on the power of the other devices first, then turn on the power of the printer.

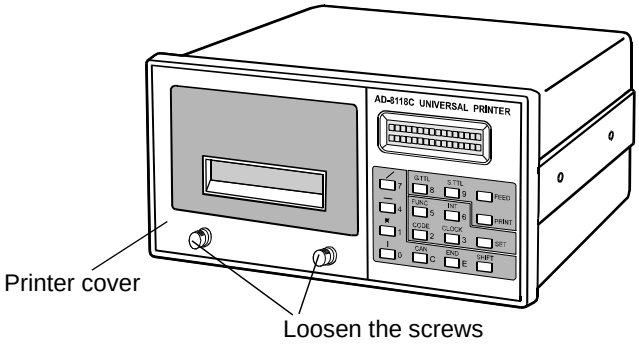
If the power is turned on at the same time, start-up of the CPU of the connected devices may be delayed and when the printer is set to the automatic print or dump print mode, the first data may not be processed normally.

For manual printing, there will be no problem if the data is input several times after the power is turned on.

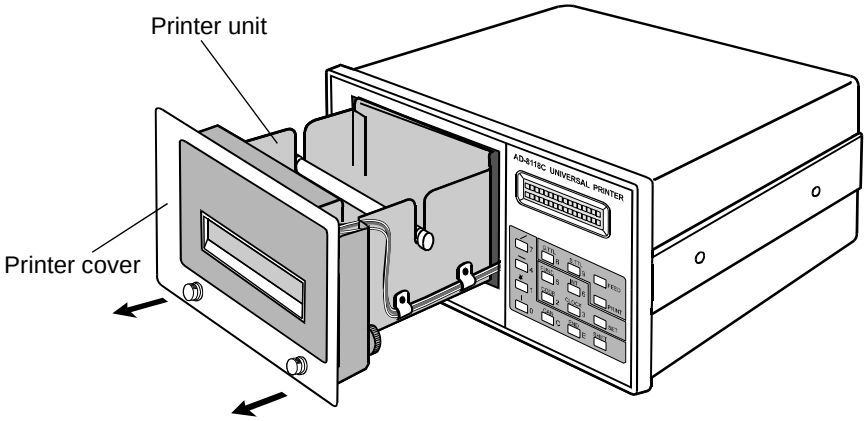
4. INSTALLATION PROCEDURE

4-1 Installing the Printer Paper

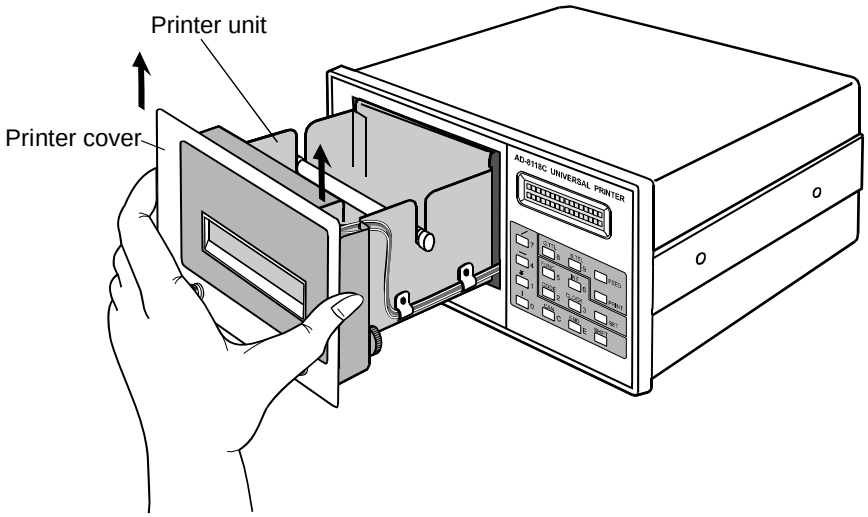
1. Turn the power off.
2. Loosen the screws on the printer cover.

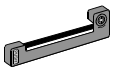


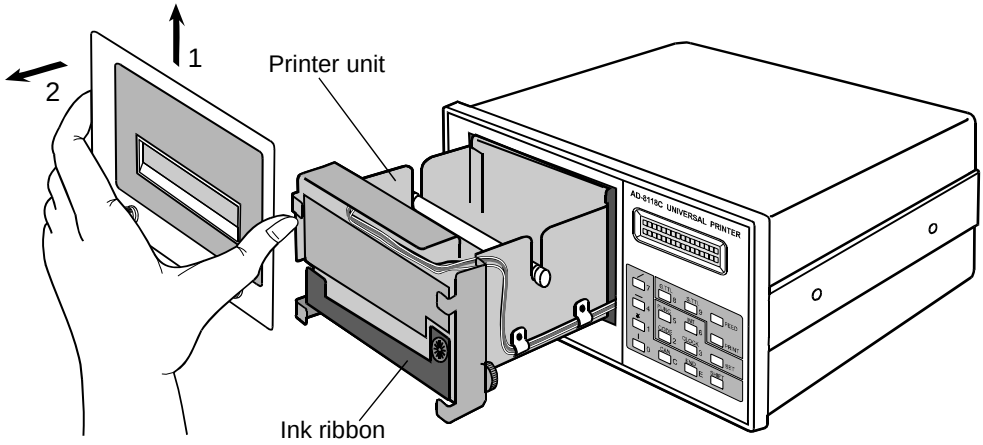
3. Pull out the printer cover and printer unit together.



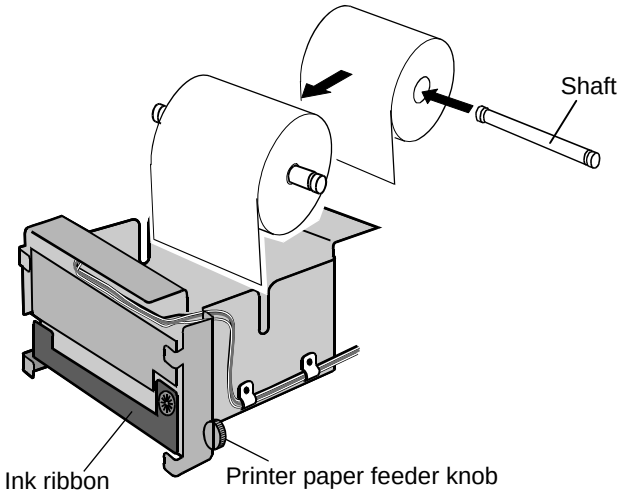
4. Remove the printer cover by lifting it gently as shown below.



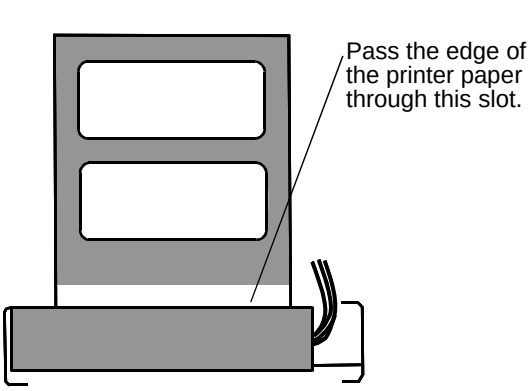
5. The ink ribbon () at the front of the printer unit can be accessed by lifting the printer cover and removing it from the printer unit.

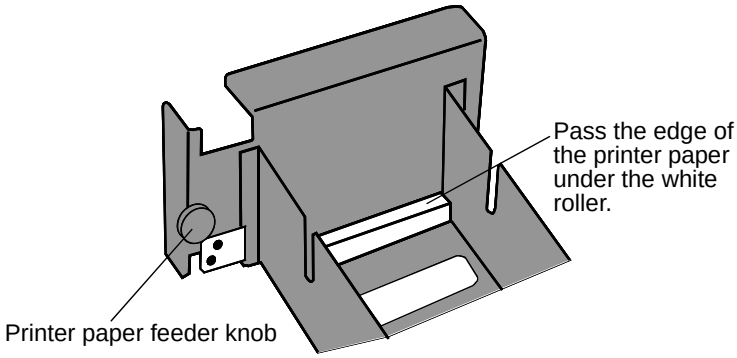


6. Peel off the adhesive tape on the printer paper completely. Insert the shaft supplied as an accessory into the printer paper and set the paper on top of the printer unit.

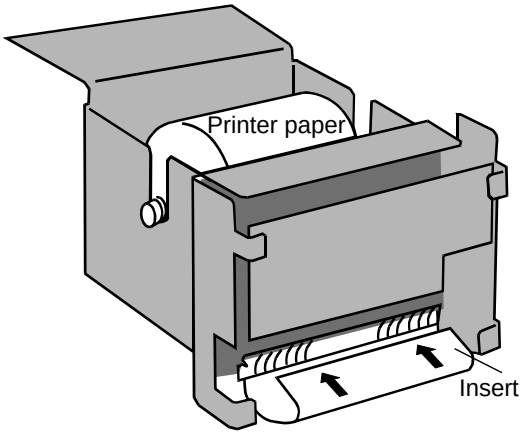


7. A top view of the printer unit is shown at the bottom left.
   Pass the edge of the printer paper through the slot and pass it under the roller.

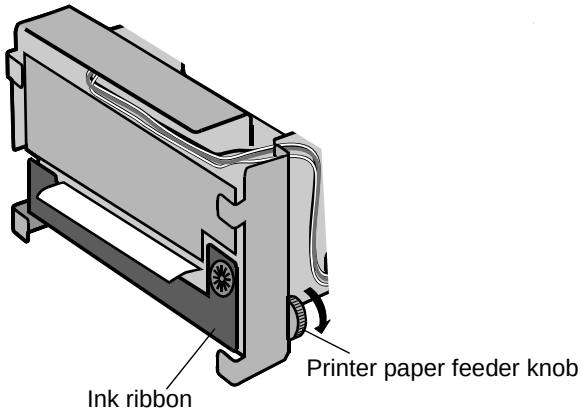




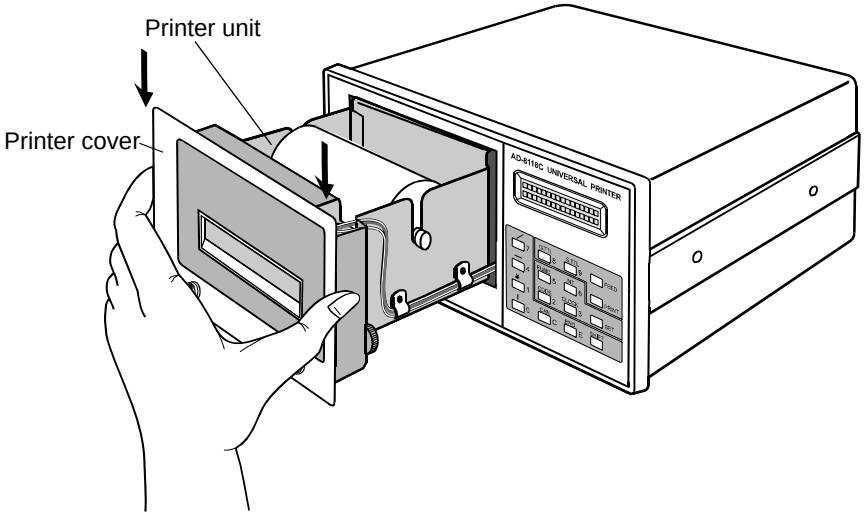
8. Pull out the paper downward and insert it into the printer slot.



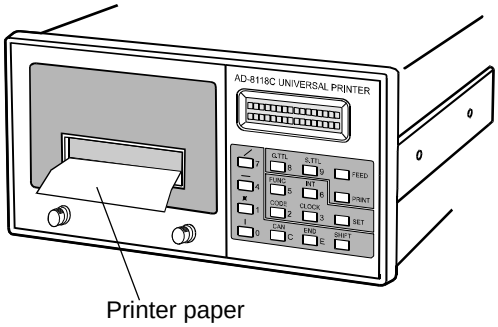
9. After installing the paper, turn the printer paper feeder knob as shown in the figure. The paper should come out the front.



10. Reinstall the printer cover onto the printer unit as shown below.



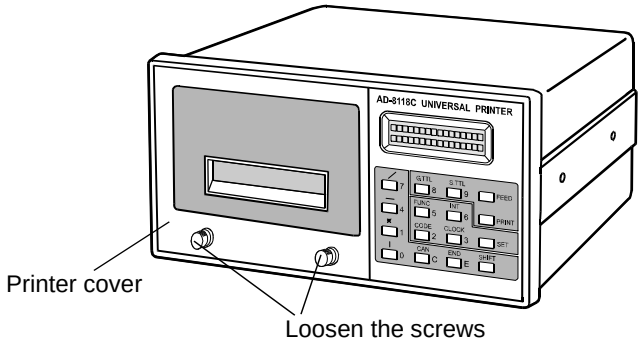
11. Insert the printer unit into the printer chassis and tighten the printer cover screws.
12. Feed a small amount of printer paper from the printer.



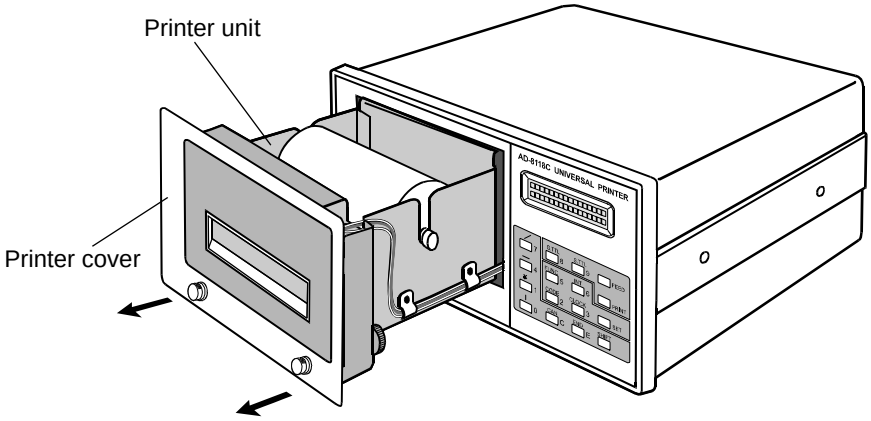
Note:
- **Do not apply excessive force to the printer unit. If normal, the printer unit can be pulled out easily. If it is hard to pull out, re-insert it and try to pull it out again.**
- **The printer is made of electronic circuits and other precision components and could be damaged if metallic powder, water or other foreign substances get inside it. Also be careful of static electricity when the printer unit is pulled out.**
  If dust or other foreign substances get inside the printer, blow it out with clean air. If the printer is used in a dusty environment, consider using a dust cover or air purge.
- **A red ending mark appears approximately 1m before the end of the roll paper; replace the paper when you see this mark. Printing without any paper in the printer may shorten the life of the printer.**

4-2 Replacing the Ink Ribbon

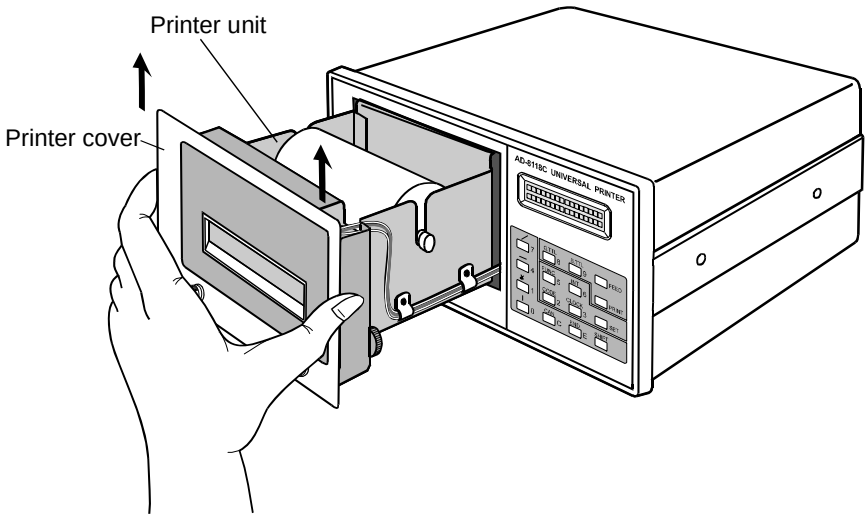
1. Turn the power off.
2. Loosen the screws on the printer cover.

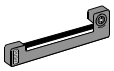


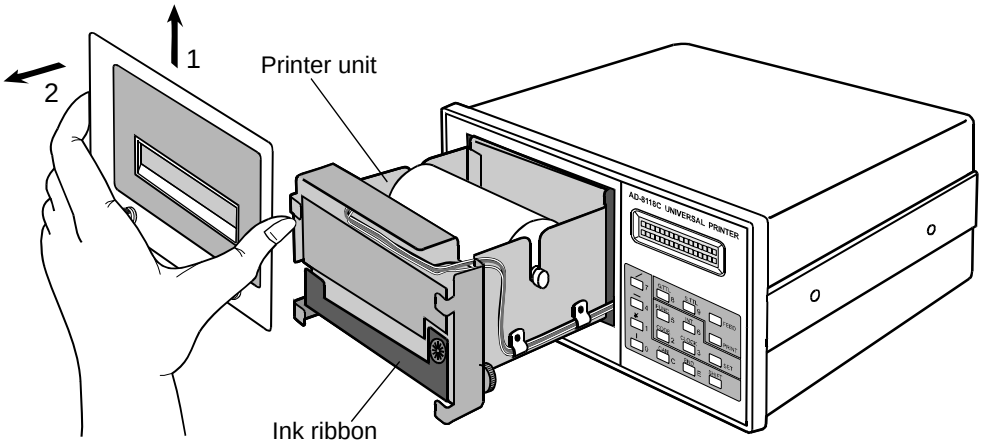
3. Pull out the printer cover and printer unit together.



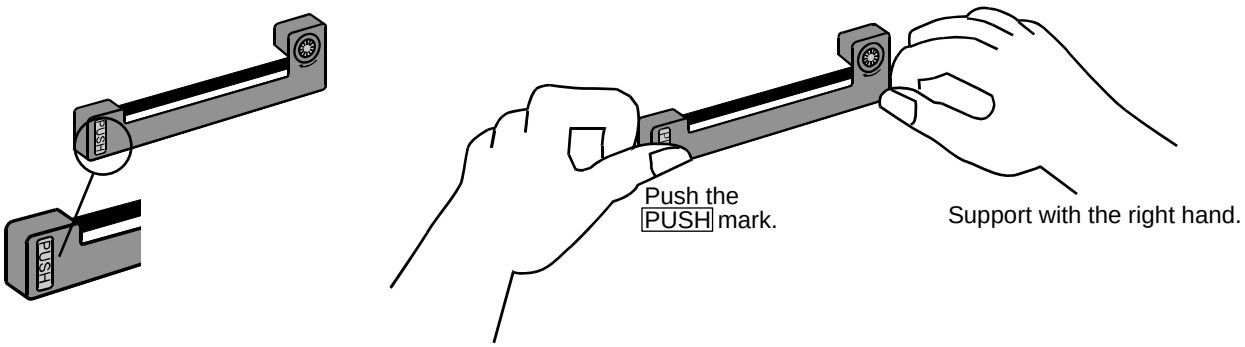
4. Remove the printer cover by lifting it gently as shown below.



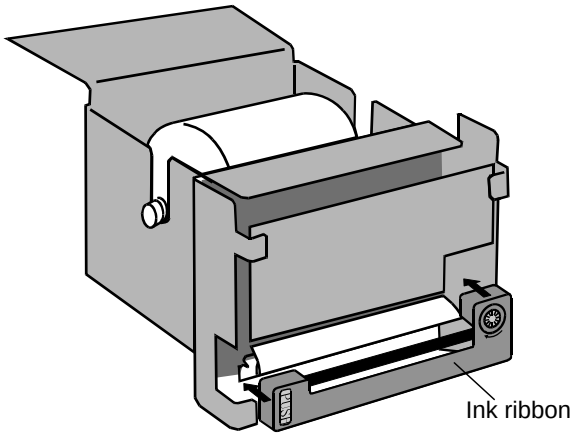
5. The ink ribbon () at the front of the printer unit can be accessed by lifting the printer cover and removing it from the printer unit.



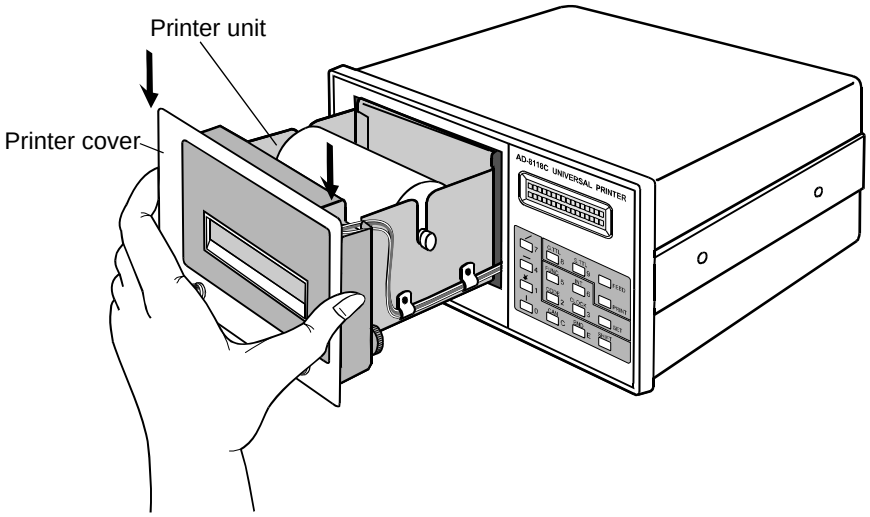
6. Push the PUSH mark at the front left of the ink ribbon while supporting the ink ribbon with your right hand as shown in the figure. Remove the ink ribbon forward.



7. Install the new ink ribbon by pushing it gently in the arrow direction as shown in the figure.



8. Reinstall the printer cover onto the printer unit as shown below.



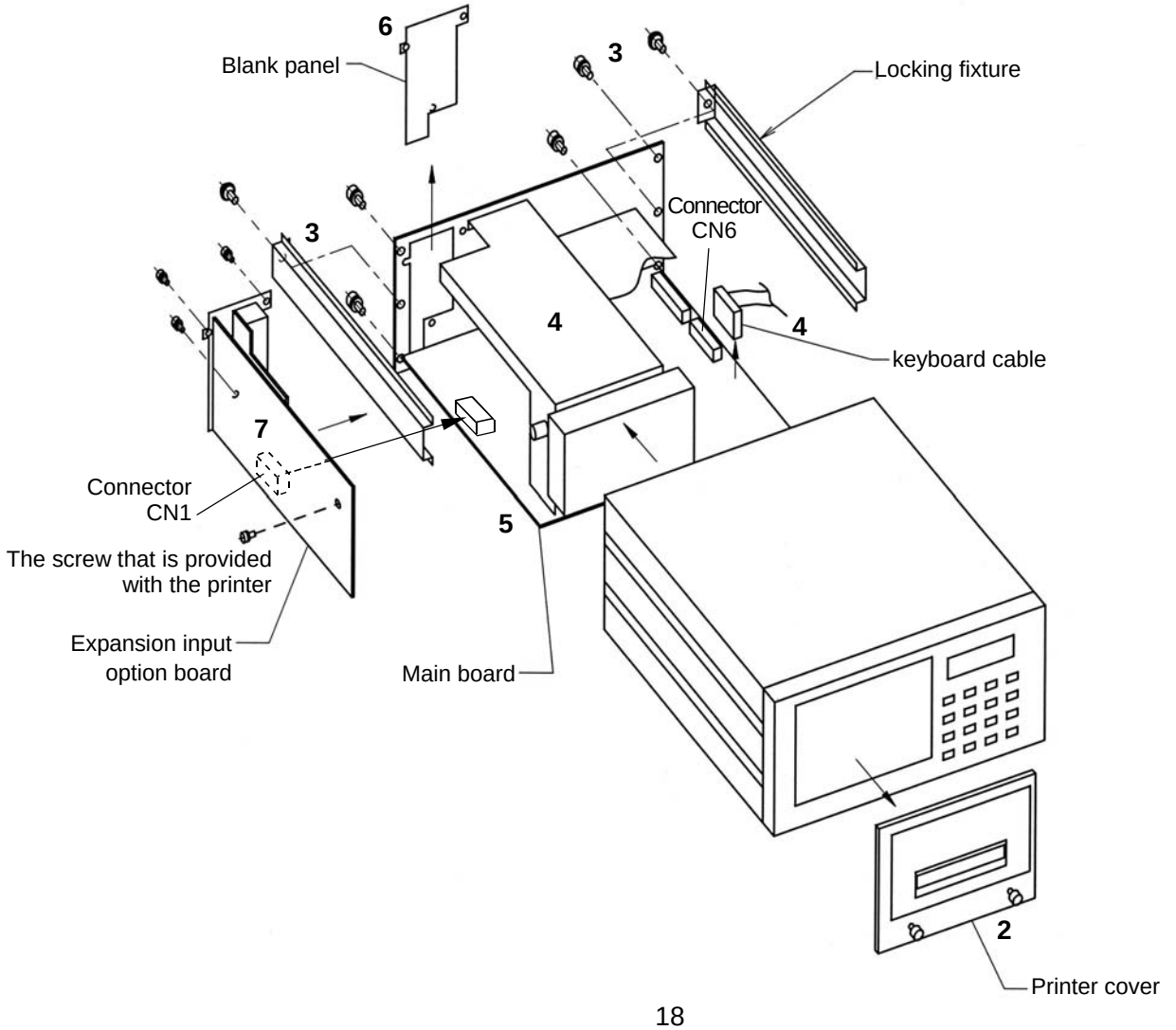
9. Insert the printer unit into the printer chassis and tighten the printer cover screws.

Note:
- **Do not apply excessive force to the printer unit. If normal, the printer unit can be pulled out easily. If it is hard to pull out, re-insert it again and try to pull it out again.**
- **The printer is made of electronic circuits and other precision components and could be damaged if metallic powder, water or other foreign substances get inside it. Also be careful of static electricity when the printer unit is pulled out.**

  If dust or other foreign substances get inside the printer, blow it out with clean air. If the printer is used in a dusty environment, consider using a dust cover or air purge when the printer is not in use.

4-3 Installing the AD-8118C-02 Expansion Input Option Board

1. Turn the power of the printer off and remove the power cord from the unit.
2. Loosen the screws on the printer cover to remove it.
3. Loosen the screws (three each on the right and left sides) on the rear panel and pull out the locking fixtures (one each on the right and left sides).
4. Pull out the main board about 5 cm and disconnect the keyboard cable from the connector CN6.
5. Pull out the rear panel with the main board attached.
6. Remove the blank panel for the option.
7. Install the expansion input option board. Insert the connector CN1 located on the center bottom of the option board into the connector on the main board. Secure the option board using the screws removed from the blank panel and the screw that is provided with the printer.
8. Insert the main board into the casing halfway and reconnect the keyboard cable.
9. Reinstall the rear panel using care not to catch the keyboard cable. Insert the locking fixtures and secure the rear panel with the screws removed in step 3. Reinstall the printer cover.
10. Reconnect the power cord and turn the printer on.
11. Set the internal setting of F19 (number of channels used).
12. Connect the printer to the device(s) used.



4-4 Installing the AD-8118C-10 Paper Winder

Connect the paper winder to the printer using the control cable provided with the paper winder. Power and control signal are supplied from the printer.

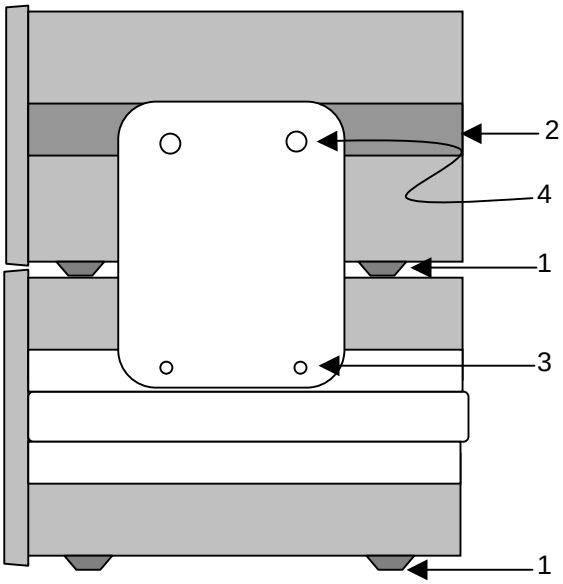
Panel-Mounted Installation

Install the paper winder right below the printer.

The panel cutout dimensions are shown in the appendix. Make a panel cutout with a sufficient distance so that the paper winder is placed below the printer and the control cable and the printer paper cover can be used.

Tabletop Installation

Connect the paper winder to the printer using the connection fixtures provided with the paper winder.



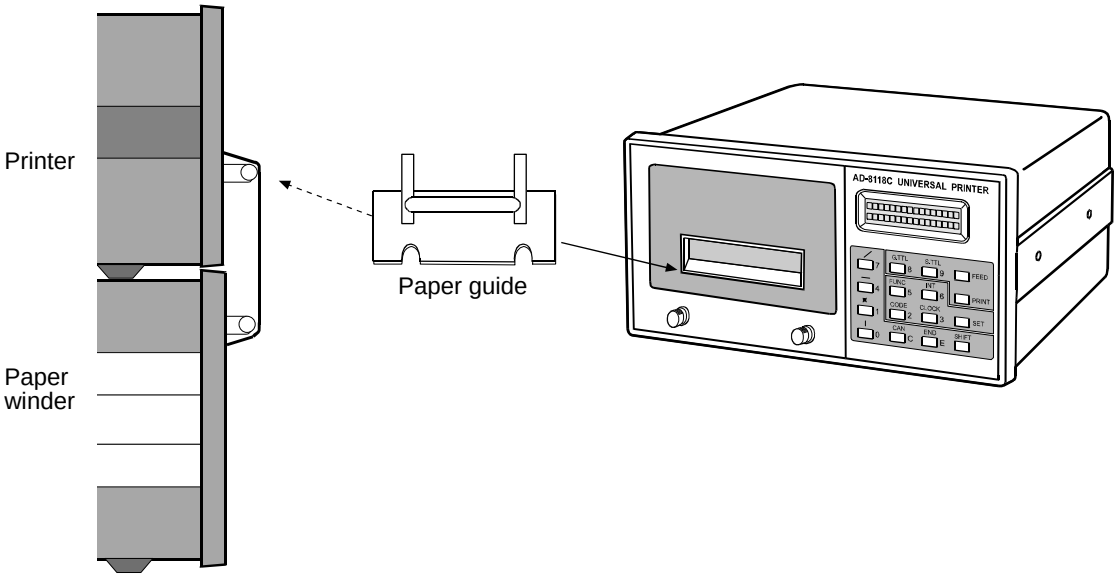
1. Attach the rubber feet to the printer and the paper winder.
2. Remove the side locking brackets (one each on the right and left side) from the printer.
3. Connect the paper winder to the printer using the connection fixtures (one each on the right and left side).

   On the paper winder, secure using the four 3M pan head screws (two each on the right and left side).
4. On the printer, secure using the four hand-tightening screws (two each on the right and left side).

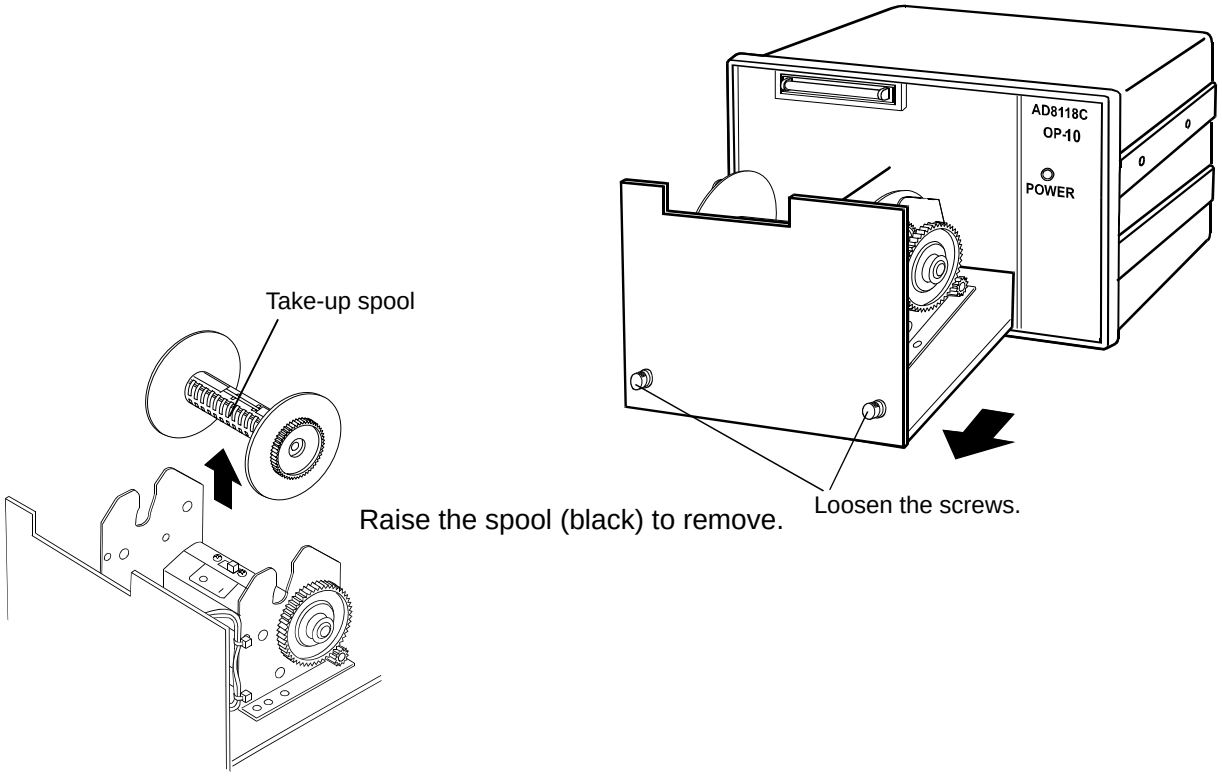
Note: The connection fixtures are secured temporarily. Do not apply impact. The printer and the paper winder may dislocate and cause malfunction.

4-5 Installing the Paper to the Paper Winder

1. Attach the paper guide to the slot on the printer.



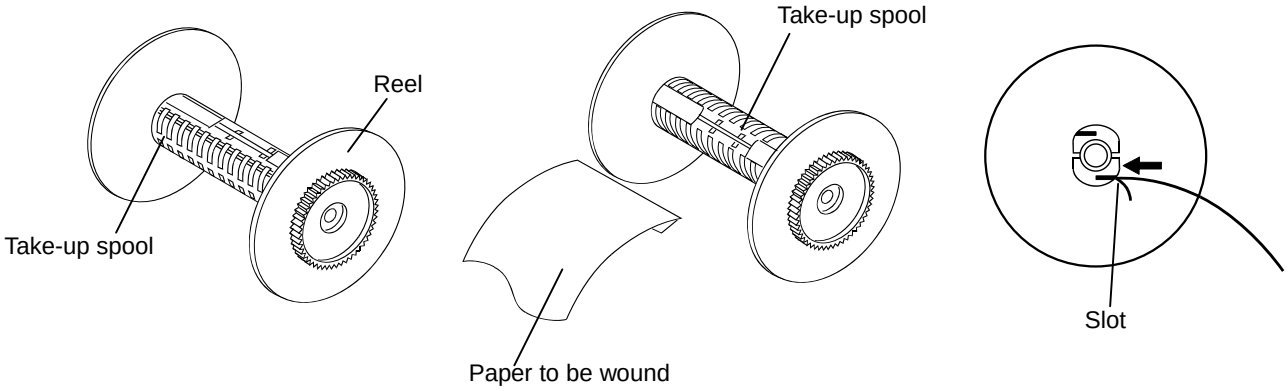
2. Loosen the two screws on the winder cover to pull out the winder unit.



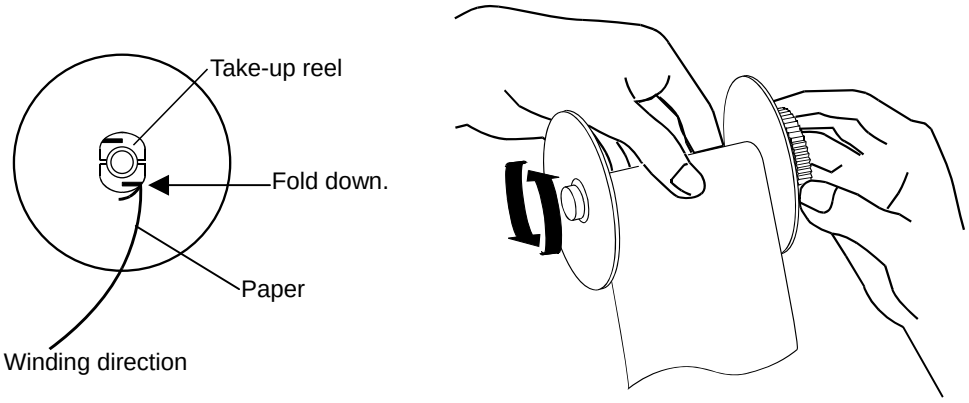
3. Wind the paper coming out of the printer onto the spool.

(1) Set the reels according to the paper size.

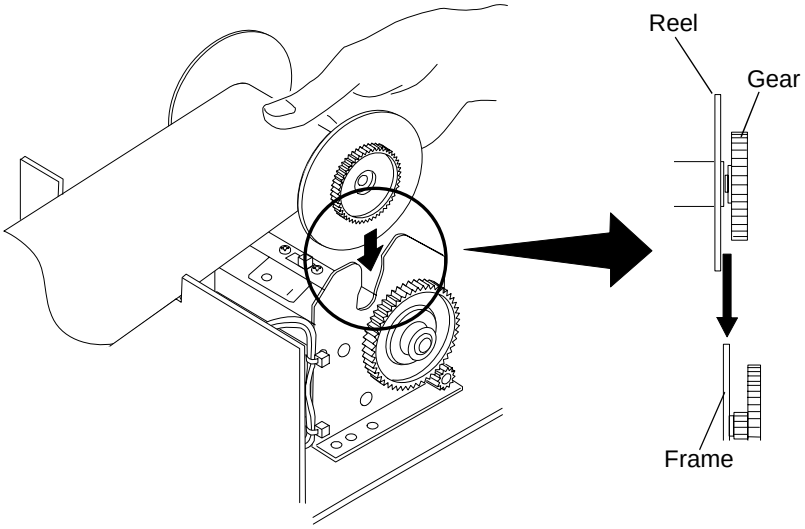
(2) Fold down the paper edge approximately 1 cm (the lower sheet when using a two-ply paper roll). Insert it into the slot of the spool until it stops. And then fold the paper at the slot in the winding direction.



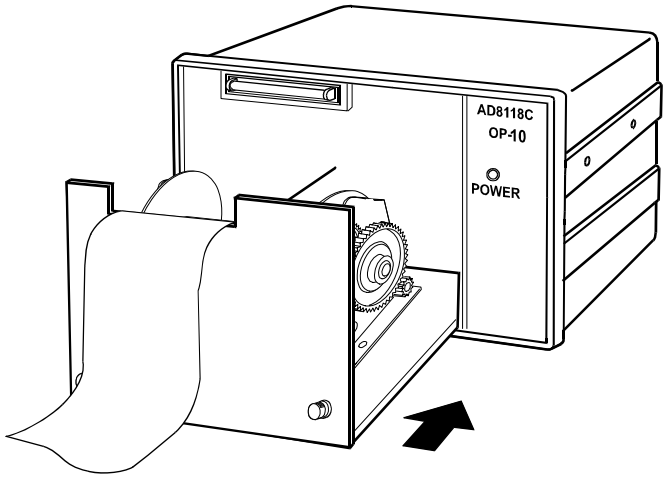
(3) Wind the paper about three turns.



4. Set the spool on the winder while holding the center of the paper so that it does not come off the spool.



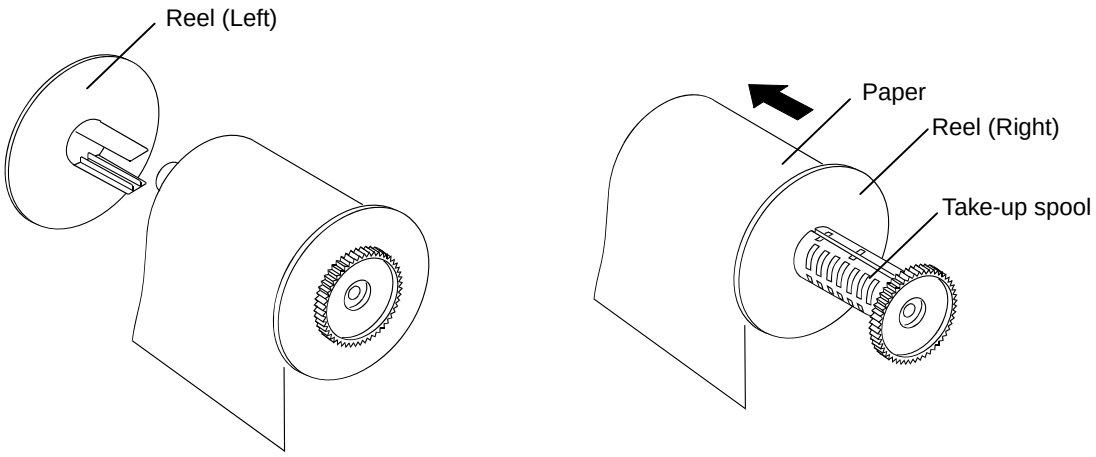
5. Push the winder unit into the case and secure the winder cover using the two screws.



6. Turn on the power of the printer. The POWER LED of the paper winder will turn on. Feed the paper several times to check the winder for normal operation. If the winder does not wind the paper properly, check that the paper is installed in the winder correctly.

4-6 Removing the Paper from the Paper Winder

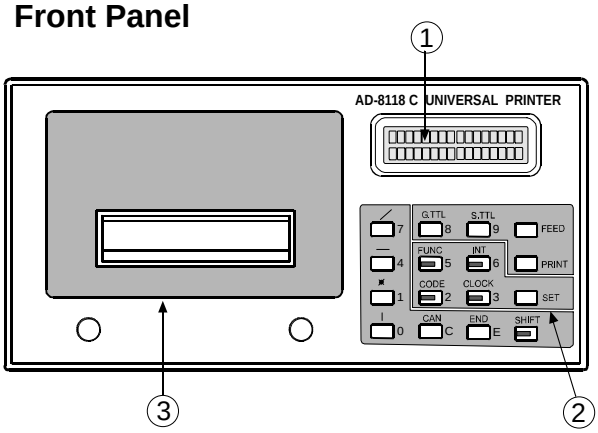
1. Remove the spool in the same way described in “Installing the Paper to the Paper Winder”.
2. Remove the left side reel.
3. Pull out the paper together with the right side reel.



5. DESCRIPTION OF PANELS

5-1 AD-8118C Universal Printer

Front Panel

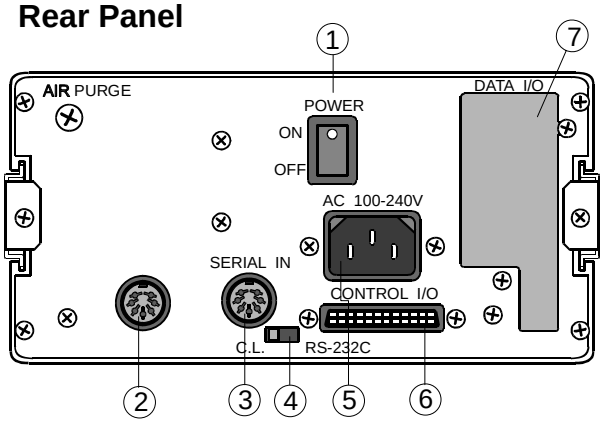


① Liquid crystal display
16-column 2-line display

② Operation keys

③ Printer cover
When replacing the printer paper or ink ribbon, loosen the screws on this cover and pull out the printer unit.

Rear Panel



① POWER switch

② OP-10. OUT connector
This is the paper winder output connector to insert the control cable provided with the paper winder.
When the paper winder is not used, assemble the DIN connector provided with the printer and insert it to protect against electrical noise.

③ SERIAL IN connector
This is the RS-232C or current loop input connector.
The channel number is 1.

④ Input selector switch
This control switches the serial input between RS-232C and current loop.

⑤ AC power cord connector

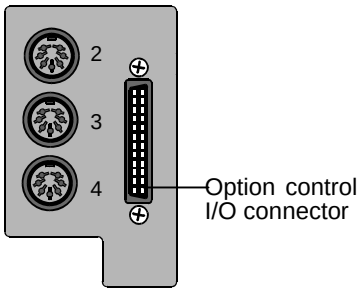
⑥ CONTROL I/O connector

⑦ Expansion input option board installation area
(Blank panel for an option)

Key Operation

Key	Description
[G.TTL]	When the internal setting of F30=1 is selected, pressing this key will print the grand total value.
[S.TTL]	When the internal setting of F20=1 is selected, pressing this key will print the subtotal value. After printing, the subtotal value is automatically cleared. Not available for the batch print mode regardless of the F20 setting.
[FEED]	This key is pressed to feed the paper.
[FUNC]	This key is pressed to enter various modes such as function setting and print mode setting in the SET mode.
[PRINT]	This key is pressed for manual print mode or printing the list in various modes.
[INT.]	This key is pressed to enter the interval print mode or UFC mode of PROGRAM_MODE to set the interval timer of SET_MODE.
[CODE]	This key is pressed to set lot number or code number used for batch printing, to set code number of SET_MODE, and to enter 6-digit code number registration mode of PROGRAM_MODE.
[CLOCK]	This key is pressed to print the date and time, and enter the date and time setting mode. When this key is pressed in each print mode, only the current date and time will be printed.
[SET]	This key is pressed to enter SET_MODE or exit SET_MODE.
[CAN.]	This key is pressed to cancel the input or clear data.
[END]	This key is pressed to confirm the settings in SET_MODE or PROGRAM_MODE.
[SHIFT]	This key is pressed to switch between SET_MODE and ROGRAM_MODE, and to switch the input key in print format setting of PROGRAM_MODE.
[/]	These keys are pressed to input settings for print format.
[-]	
[*]	
[0] to [9]	These keys are pressed to input numerical values such as code number and function number.

5-2 AD-8118C-02 Expansion Input Option Board



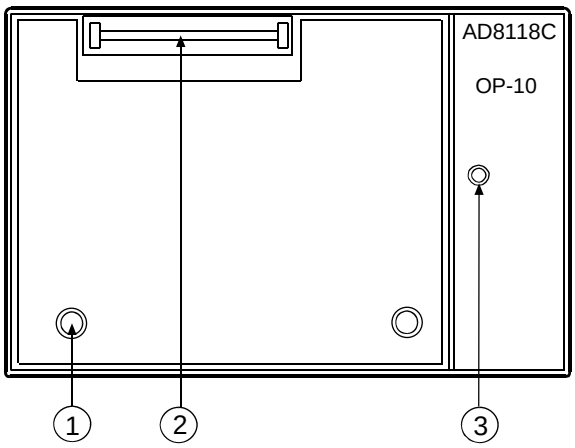
The Serial input can be expanded by 3 channels and control I/O can be added. The channel numbers from the top are CH2, CH3, and CH4.

The added control I/O functions in combination with the standard control I/O.

Switching between RS-232C and current loop is by rewiring the connector.

5-3 AD-8118C-10 Paper Winder

Front Panel



① Winder cover

When installing or removing the printer paper, loosen the two screws on this cover to pull out the winder unit.

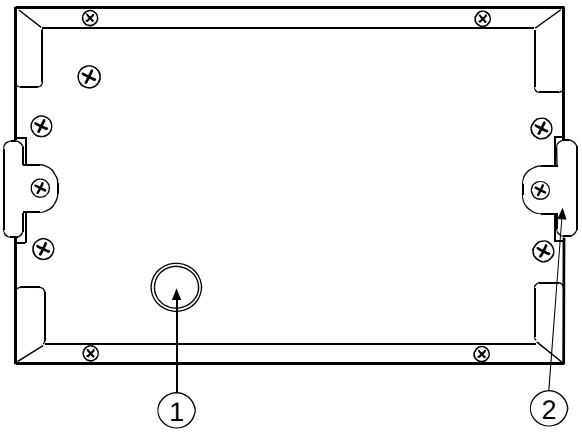
② Slot

Slot for the printer paper to enter the winder.

③ POWER LED

This LED turns on when the printer turns on.

Rear Panel



① Connector to the printer

Insert the 1KO3228 control cable to make a connection between the printer and the paper winder. Once connected, power and control signal are supplied from the printer.

② Side locking bracket for panel-mounted installation

6. OPERATION MODES

6-1 Operation Modes

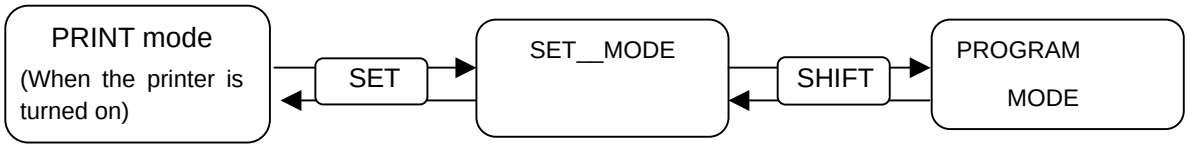
<table>
<tr><th>Operation mode</th><th>Function</th><th>Description</th></tr>
<tr><td rowspan="4">PRINT mode

5/20/2007 12:34</td><td>Random print</td><td>Print mode to print in F3=1/F9=1 standard format.</td></tr>
<tr><td>Dump print</td><td>Print mode to print in F3=2 dump print mode.
F9 setting is not applicable.
Only available for CH1.</td></tr>
<tr><td>Interval print</td><td>Set F3=1/F9=1.
Press [INT.] to enter the interval print mode.
“INTERVAL PRINT” is displayed in the lower part of the LCD.
To exit the mode, press [INT.] again.
The printing format is the same as random printing.</td></tr>
<tr><td>Batch print</td><td>Print mode to print in F3=1/F9=2 batch print mode.</td></tr>
<tr><td colspan="3">SET key to switch between PRINT mode and SET mode</td></tr>
<tr><td rowspan="5">SET_MODE
(SET mode)

SET MODE
F/INT/CODE/CLOCK</td><td>Function</td><td>Press [FUNC] to set functions.</td></tr>
<tr><td>Interval timer</td><td>Press [INT.] to set the timer for interval print function.</td></tr>
<tr><td>Code number</td><td>Press [CODE] to set code number (F14=3).
F14=3 (Code number setting by key input):
Set code number for each channel, to CH1 through CH4</td></tr>
<tr><td>Calendar/clock</td><td>Press [CLOCK] to set the date and time.</td></tr>
<tr><td>[END]</td><td>Press [END] to confirm the settings above.
To exit SET_MODE without confirming or changing the settings, press [SET].</td></tr>
<tr><td colspan="3">SHIFT key to switch between SET mode and PROGRAM mode</td></tr>
<tr><td rowspan="4">PROGRAM__MODE
（PROGRAM mode）

PROGRAM MODE
F/CODE/INT SHIFT</td><td>Printing format</td><td>Press [FUNC] to set random printing format by key input.</td></tr>
<tr><td>Code conversion table
(2-digit to 6-digit)</td><td>Press [CODE] to set the code conversion table (2-digit to 6-digit).</td></tr>
<tr><td>UFC_MODE</td><td>Press [INT.] to set random printing format by communications (UFC_MODE).</td></tr>
<tr><td>[END]</td><td>Press [END] to confirm the settings above.
To exit SET_MODE without confirming or changing the settings, press [SET].</td></tr>
</table>

6-2 Mode Selection Procedure



SET_MODE

When the printer is turned on, it starts up in the PRINT mode.

Then, press [SET] to display

```
SET__MODE
F/INT/CODE/CLOCK
```

.

Press [FUNC] (Function) to enter the function setting mode.

Press [INT.] (Interval) to enter the interval timer setting mode.

Press [CODE] to enter the code number setting by key input mode.

Press [CLOCK] to enter the date and time setting mode.

Press [SET] again to exit the SET mode.

PROGRAM_MODE

When

```
SET__MODE
F/INT/CODE/CLOCK
```

is displayed,

press [SHIFT] to enter the PROGRAM mode.

```
PROGRAM__MODE
F/CODE/INT  SHIFT
```

Press [SHIFT] again to return to the SET mode.

Press [FUNC] (Function) to enter the printing format setting mode for random printing and display [L- ■].

Press [CODE] to enter the code conversion table setting mode and display

```
CODE__2D
     6D
```

.

Press [INT.] (Interval) to enter communication setting mode (UFC MODE) for random printing format and display

```
UFC__MODE
    WAIT TEXT
```

.

7. PRINT MODES

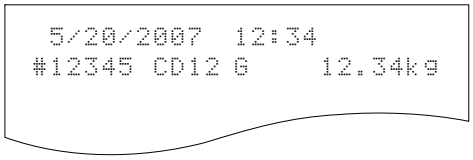
7-1 Random Print Mode

The random print mode prints the weight data each time the printer receives data from devices connected. Set the print timing at F-10 (Print timing) for each channel.

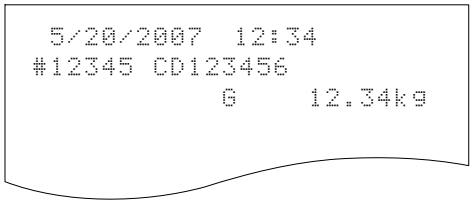
Below is the random printing example (F3=1/F9=1) with the default format (factory setting format).

Standard characters

With 2-digit code number



With 6-digit code number



(1) Using the enlarged characters, the number of characters to be printed per line is 12. Program the printing format in the PROGRAM mode so that the characters are within 12 per line.

(2) With manual printing set (F10=1/2/3), pressing [PRINT] will print the valid data received within 3 seconds and add the data to the internal memory.
If the data is invalid, an error message “F_ERROR” or “I_ERROR“ is printed accordingly.
If no data is received, “T_ERROR“ is printed.

(3) When the option board is installed and multiple channels are used, press [PRINT] to display

CH No. ?

.
Input a channel number (1 to 4) to be printed

(4) When [PRINT] is pressed while holding down [CAN.], “* CANCEL” is printed and the data added last in memory will be cleared. No other data will be cleared.

(5) With the batch print mode set (F3=1/F9=2), press [PRINT] to display “BACH_MODE” for one second in the lower part of the LCD.

7-2 Dump Print Mode

The dump print mode (F3=2) prints the data as received in the standard format and is available only for standard serial input (CH1).

For the characters which can be printed, see the Character Code Table in the appendix.

Control codes available for the dump print mode

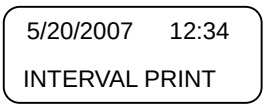
0DH	Prints the characters up to this input and moves the character point to the beginning of the next line and resets the enlarged character specification.
0EH	Enlarged characters are printed from the character after this code. This code is reset by 0DH or 14H input.
14H	If this code is input in the enlarged character mode, the printer returns to the standard character mode. This command is ignored in the standard character mode.
1BH	This code is used in combination with the following two characters as an auxiliary code: 1BH+44H Prints the date. 1BH+54H Prints the time.

*CR (0DH) and LF (0AH) are not printed.

7-3 Interval Print Mode

The interval print mode prints the data at a certain interval.

(1) In the random print mode, press [INTERVAL] to display



.

"INTERVAL PRINT" is displayed in the lower part of the LCD.

To return to the random print mode, press [INTERVAL] again.

(2) The same setting applies to CH1 through CH4.

(3) In the dump print mode (F3=2), batch print mode (F3=1/F9=2) and manual print mode (F10=1, 2, 3), interval print mode is not available.

The channels specified at F-10=4, 5, 6 (Automatic printing) perform interval printing.

With F10=5 (Automatic addition only), interval print mode is available

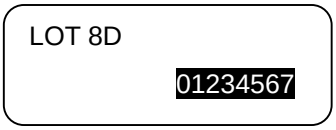
7-4 Batch Print Mode

The batch print mode temporarily stores the input data in a buffer, collects and prints the data in the buffer for each channel when a batch print command is input. It is mainly suitable for formula weight printing. The total of batch printing by channel is printed as lot printing.

Setting and Operation

(1) Do not use a connected device in the stream mode as automatic addition is performed internally. (The F10 setting is ignored). Use the connected device in the automatic print or manual print mode.

(2) Press [CODE] to set an 8-digit lot number. No zero-suppression is performed. If "01234567" is input as a lot number, "No.01234567" is printed.



The lot number is printed after the date line in batch printing and lot printing. The lot number is retained unless changed.

8-digit lot number printing is available only in the batch print mode (F3=1/F9=2).

(3) An 80-line buffer is provided for each channel.

(4) The data in the buffer is retained even when the power is turned off. When the power is turned on again and a batch print command is input from the control I/O, the data is printed.

(5) To clear the data in the buffer, press [PRINT] while holding down [CAN.]. "* CANCEL" is printed and the data in the buffer is cleared. At this time, the data in the buffer has already been added internally and the calculated total value is not cleared.

(6) The batch printing is the total for each batch. The lot printing is the total value after several batch operations.

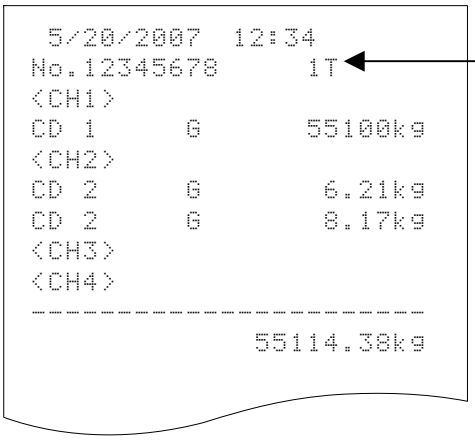
(7) In the lot printing, the data is cleared after printing.

(8) Subtotal printing is not available in the batch print mode. When [S.TTL] is pressed or a print command is input from the control I/O, "BATCH_MODE" is displayed for 2 seconds in the lower part of the LCD.

(9) The grand total printing is possible. The grand total is not automatically cleared after printing. Pressing [G.TTL] while holding down [CAN.] clears the grand total and displays "* CLEAR". This operation does not clear the data for batch printing.

Printing Example

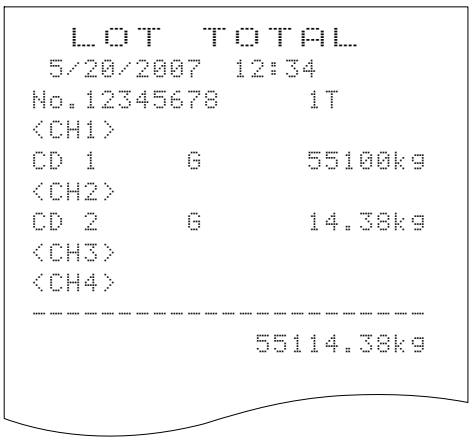
Batch printing (printed by a batch print command)(When F9=2)



Batch number

Incremented for each batch and serves as a serial number. No. 12345678 is an 8-digit lot number and is input from the keys.

Lot printing (Printed by a lot print command)



This is an example of lot printing after the batch printing above was performed one time.

8. SET_MODE

8-1 Setting the Functions

Function setting procedure

(1) Press [FUNC] to enter the function setting mode.

F- ■

is displayed.

(2) Using the numerical keys [0] to [9], input the function number to be set, press [END] to confirm it and display the function data.

F- 1 3
2400bps

(3) Press [*] or [↓] to change the function data.

(4) Press [END] to confirm the change and move to the next function data.

(5) Press [PRINT] to print the function list.

(6) Press [SET] to exit the function setting mode.

(7) The function that is to be specified for each channel is indicated by a 4-digit number.

Below is an example of F-10 (Print timing).

F-10 3333 CH1
Manual add print

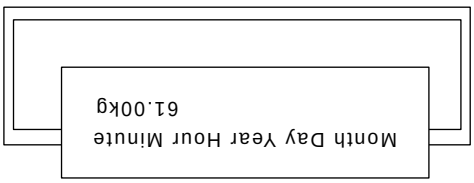
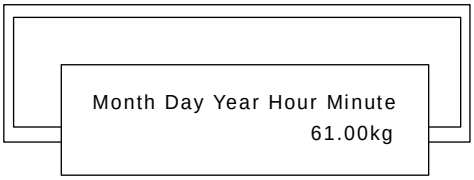
The default value is 3333.

Each digit corresponds to a channel, from CH1 through CH4: [3333 CH1], [3333 CH2], [3333 CH3], [3333 CH4]

Press [*] or [↓] to set the function and press [END] to conform the setting. The cursor moves to the left digit. Set the function for each channel.

*

Function List

No.	Function	Description		Default value
F- 1	Baud rate (CH1 to CH4)	RS-232C	1: 600 bps 2: 1200 bps 3: 2400 bps 4: 4800 bps 5: 9600 bps 6: 19.2 kbps 7: 38.4 kbps	3 (2400 bps)
		Current loop	1: 600 bps 2: 1200 bps 3: 2400 bps	
	•If the data cable is long or transmission errors may occur, set the baud rate to slower values..			
F- 2	Data bits (Only for CH1)	1: 7 bits/EVEN 2: 8 bits/None		1 (7 bits)
	•The number of data bits can be selected to be 7 bits or 8 bits for CH1 only. •For CH2 to CH4, the number of data bits is fixed at 7 bits even parity. •For 7 bits, the parity is 1 even and for 8 bits, there is no parity bit.			
F- 3	Input signal mode (Only for CH1)	1: Standard format 2: Dump print mode*		1 (Standard format)
	1: Standard format •Prints the number, weight data, etc. according to the data received from the device connected and sum those data. 2: Dump print mode •Prints the data as received. •Totaling and printing format program functions can not be used. •The dump print mode is only for CH1 (standard serial input). •Starts to print when CR or CR, LF is received, or the number of characters exceeds 26.			
F- 4	Printing mode	1: Normal characters 2: Inverted characters		1 (Normal characters)
	Available to all of the printing operations (Random printing, batch printing, dump mode printing, subtotal, grand total). 1: Normal characters (Random printing) During printing, normal characters are output in the reverse direction, but are printed in the forward direction  2: Inverted characters (Random printing) During printing, inverted characters are output in the forward direction, but are printed in the reverse direction.  			

<table>
<tr><td rowspan="2">F- 5</td><td>Input conditions</td><td>0: No (Not received)
1: Yes (Received)</td><td>1
(Yes)</td></tr>
<tr><td colspan="3">0: No
Negative or unstable weight data are regarded as invalid and are not printed.
1: Yes
Even negative or unstable weight data are regarded as valid and are printed.</td></tr>
<tr><td rowspan="2">F- 6</td><td>Character size</td><td>1: Standard character (5x7 dots)
2: Enlarged character (10x7 dots)</td><td>1
(Standard character)</td></tr>
<tr><td colspan="3">The number of columns/line is 24 for the standard size and 12 for the enlarged size.</td></tr>
<tr><td rowspan="2">F- 7</td><td>key input</td><td>0: Disabled
1: Enabled</td><td>1
(Enabled)</td></tr>
<tr><td colspan="3">Enables key inputs or disables key inputs other than [SET].</td></tr>
<tr><td rowspan="2">F- 8</td><td>Number of paper feed lines</td><td>0 to 9</td><td>2</td></tr>
<tr><td colspan="3">Sets the number of paper feed lines after each time printing and cumulative total printing.</td></tr>
<tr><td rowspan="2">F- 9</td><td>Print mode</td><td>1: Random print mode
2: Batch print mode</td><td>1
(Random print)</td></tr>
<tr><td colspan="3">1: Random print mode
•The random print mode prints the input data in the format set at F10 and perform subtotal and grand total functions.
•When the print timing is set to addition only, printing the input data is not performed. (When F10 is set to 2 or 5.)

2: Batch print mode
•In the batch print mode, the input data is temporarily stored in a buffer and the data in the buffer is printed for each channel when a batch print command is input.
•An 80-line buffer is provided for each channel.
•The printing format is fixed.</td></tr>
<tr><td rowspan="2">F-10</td><td>Print timing</td><td>1: Manual printing
2: Manual addition
3: Manual addition printing
4: Automatic printing
5: Automatic addition
6: Automatic addition printing</td><td>3
(Manual addition printing)</td></tr>
<tr><td colspan="3">Only available for standard format (F3=1/F9=1).
Manual
Manual printing processes the first valid data that is input within 3 seconds after a print command is input from [PRINT] or the control I/O. Set the data output of the connected device to the STREAM mode.
1: Manual printing: Only printing is performed at the print command input.
2: Manual addition: Only addition is performed at the print command input.
3: Manual addition printing: Printing and addition are performed at the print command input.

Automatic
Automatic printing processes all the input valid data. Set the data output of the connected device to the automatic print or the manual print mode
4: Automatic printing: Only printing is performed at data input.
5: Automatic addition: Only addition is performed at data input.
6: Automatic addition printing: Printing and addition are performed at data input..</td></tr>
</table>

F-11	Input data selection	1: All enabled 2: Gross weight 3: Net weight 4: Tare	1 (All enabled)
	This function setting is used when connecting an indicator and multiple peripheral devices. Mainly the indicator is set to the mode to transmit all of Gross/Net/Tare (G/N/T). 1: All enabled When G/N/T are printed at once, set the printing format accordingly in the PROGRAM mode. Also for data format of other devices such as a balance or scale. 2: Gross weight Enables the data when the second header is “GS” or “G_”. 3: Net weight Enables the data when the second header is “NT” or “N_”. 4: Tare Enables the data when the second header is “TR” or “R_”.		
F-12	Calculation data	1: Total all 2: Total gloss weight only 3: Total net weight only 4: Total tare only	1 (Total all)
	This function setting is used when connecting an indicator and multiple peripheral devices. Mainly the indicator is set to the mode to transmit all of G/N/T. 1: Total all When G/N/T are printed at once, set the printing format accordingly in the PROGRAM mode. Also for data format of other devices such as a balance or scale. 2: Total gross weight only Enables the data when the second header is “GS” or “G_”. 3: Total net weight only Enables the data when the second header is “NT” or “N_”. 4: Total tare only Enables the data when the second header is “TR” or “R_”.		
F-13	Key input code No. (Number of digits)	1: 2-digit code number 2: 6-digit code number 3: 6-digit code number and increment	1 (2-digit)
	This function selects whether the code No. is handled as 2 digits or 6 digits. 1: 2-digit code number The input method is set at F14. A code number is converted to six digits by selecting F15=1. 2: 6-digit code number When the code number is set to 6 digits, all input is from the keys. (F14 and F15 settings are ignored.) 3: 6-digit code number and increment When the code number is set to 6 digits, all input is from the keys. (F14 and F15 settings are ignored.) The code number is incremented by one at each printing.		
F-14	Code number input method	1: Control I/O 2: Serial input 3: Key input	3 (Key input)
	Available when F13=1 (2-digit code number).		
F-15	Converts code number from 2 digits to 6 digits.	0: Not converted 1: Converted	0 (Not converted
	Available when F13=1 (2-digit code number).		

F-16	Polarity and header printing	0: Not printed 1: Printed	1 (Printed)
	Sets whether or not to print the polarity (-) and the second header (G: gross, N: net, tare) that is formatted by the indicator.		
F-17	Time display	0: Not displayed 1: Displayed	1 (Displayed)
	Sets whether or not to display the date and time in THE LCD.		
F-18	Time printing at random printing	1: First time 2: Each time	2 (Each time)
	Sets when the date and time are printed in the random print mode.		
F-19	Number of input channels	1: 1 2: 2 3: 3 4: 4	1 (1)
	Sets the number of input channels when the expansion input option board is installed.		
F-20	Subtotal	0: Not used 1: Used	1 (Used)
F-21	Subtotal by code number	0: Not used 1: Used	1 (Used)
F-22	Subtotal by channel	0: Not used 1: Used	1 (Used)
F-23	Printing Statistics by channel	0: Not used 1: Sample standard deviation (N-1) 2: Population standard deviation (N)	0 (Not used)
F-24	Printing cumulative subtotal statistics	0: Not used 1: Sample standard deviation (N-1) 2: Population standard deviation (N)	0 (Not used)
F-30	Grand total	0: Not used 1: Used	1 (Used)
F-31	Grand total by code number	0: Not used 1: Used	1 (Used)
F-32	Grand total by channel	0: Not used 1: Used	1 (Used)
F-33	Printing Statistics by channel	0: Not used 1: Sample standard deviation (N-1) 2: Population standard deviation (N)	0 (Not used)
F-34	Printing cumulative grand total statistics	0: Not used 1: Sample standard deviation (N-1) 2: Population standard deviation (N)	0 (Not used)

● Sample standard deviation

$$\sigma n\text{-}1 = \sqrt{\frac{N\Sigma Xi^2 - (\Sigma Xi^2)}{N(N\text{-}1)}}$$

● Population standard deviation

$$\sigma n = \sqrt{\frac{N\Sigma Xi^2 - (\Sigma Xi^2)}{N^2}}$$

N : Number of times

Xi : Weight data

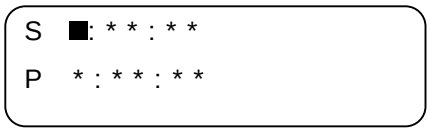
● Statistics printing items

MAX : Maximum weight value
MIN : Minimum weight value
$\bar{X}$: Average weight value
R : Range (Difference between maximum and minimum)
$\sigma n\text{-}1$: Sample standard deviation
or
σn : Population standard deviation

8-2 Setting the Interval Timer

Interval timer Setting Procedure

(1) Press [INT.] to enter the interval setting mode.



is displayed. The default value is 10 seconds.

"S": Non-printing time, "T": Print time

The digit at the left end represents the hour.

The 2 digits at the center represent the minute.

The 2 digits at the right end represent the second.

(2) Set the numbers in accordance with movement of the cursor from left to right.

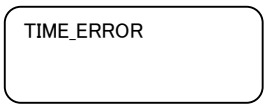
Press [END] to proceed to the next digit, and [SHIFT] to return to the previous digit.

Press [SET] to confirm the setting and return to the PRINT mode.

The setting is the same for channels 1 through 4.

(3) "S" sets the non-printing time.

0 (zero) can not be selected for non-printing time. If 0 is selected, an error message "TIME_ERROR" is displayed for 1 second and the printer returns to the non-printing time setting mode.

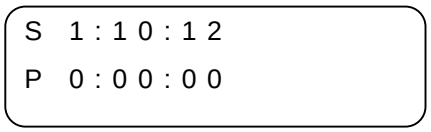


(4) "P" sets the print time.

When the print time is set to 0:00:00, the first data sent after the non-printing time elapsed is printed one time.

(5) Setting example

To print the data at an interval of 1 hour 10 minutes and 12 seconds, set as shown below.



Interval Printing

Refer to "7-3 Interval Print Mode".

8-3 Setting the Code Number

Code number is the number which is paired with the weight data. Three types of code number input are available in F13.

When code number input is 2 digits (F13=1)

The code number can be input for each material and product name and the total of each can be printed.

(1) The code number can be registered for each channel (CH1 to CH4).

Press [CODE] to enter the code number setting mode.

CH1	* *	CH2	* *
CH3	* *	CH4	* *

is displayed.

The 2 digits at the right represent the code number.

Input a number for each digit. For example, to input a code number of 1, press the key as follows: [0] [END] [1] [END]

Press [END] to confirm the setting and proceed to the next digit.

Press [SHIFT] to return to the previous digit.

Press [SET] to return to the PRINT mode.

(2) Totaling for each code number can be performed.

(3) When F15=1, the code number that is set in the PROGRAM mode is printed and the total of each can be printed.

For PROGRAM_MODE code conversion table setting procedure, refer to “9-3 Setting the Code Conversion Table “

When code number input is 6 digits (F13=2)

This is convenient when separating print data by lot and when referencing each print data.

- □ F14 and F15 settings are ignored and the 6-digit code number by key input is printed.
- □ The code number can not be registered for each channel. It is the same for all the channels.
- □ Totaling for each code number cannot be performed.

Code number setting procedure

(1) Press [CODE] to enter the code number setting mode.

CODE	6D	* * * * * ■

is displayed.

Press [END] to confirm the setting, and [CAN.] to return to the previous digit.

Press [SET] to return to the PRINT mode.

When code number input is 6 digits and increment (F13=3)

- □ F14 and F15 settings are ignored and the 6-digit code number by key input is printed. At each printing, the code number is incremented. After 999999, _ _ _ _ _ 1 is printed.
- □ The code number can not be registered for each channel. It is the same for all the channels.
- □ Totaling cannot be performed
- □ The incremented code number is retained even when the power is turned off. To use a new code number, set the code number again.
- □ The code number setting procedure is the same as for F13=2.

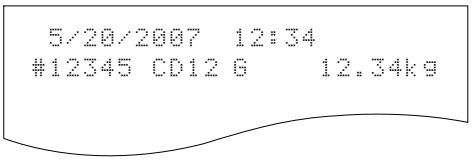
6-digit code number printing format

The default printing format for random printing is automatically switched for 2-digit code number and 6-digit code number.

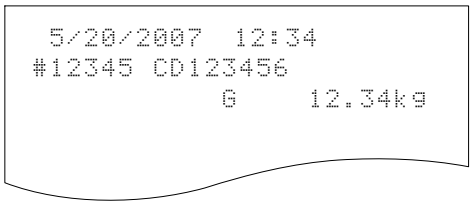
To program the printing format, the code number according to the function setting is used.

Standard characters

With 2-digit code number



With 6-digit code number



8-4 Setting the Date and Time

□ The date is displayed in two ways:

USA: MM/DD/YYYY (e.g. 12/31/2007)

Europe: DD/MM/YYYY (e.g. 31/12/2007)

□ The time is in 24-hour system.

Date and Time Setting Procedure

(1) Press [CLOCK] to enter the date and time setting mode.

```
20■7/05/20/
12:34
```

is displayed.

Press [END] to move the cursor one column to the right.

(2) Set the year by inputting the last 2 digits.

(3) Set the date. For example, to set May for the month, input as follows: [0] [END] [5] [END].

(4) Set the time in 24-hour system.

(5) After setting, press [SET] to confirm the setting and return to the PRINT mode.

9. PROGRAM_MODE

9-1 Setting the Printing Format

The random printing/interval printing format of nine lines is programmed by key input. The default setting is the standard format. To change the setting, clear one line or all lines of the program data.
To enter the PROGRAM mode, first enter the SET mode by pressing [SET] in the PRINT mode, and then press [SHIFT].

Printing Format Setting Procedure

(1) In the PROGRAM mode, press [FUNC].

Line ■ is displayed.

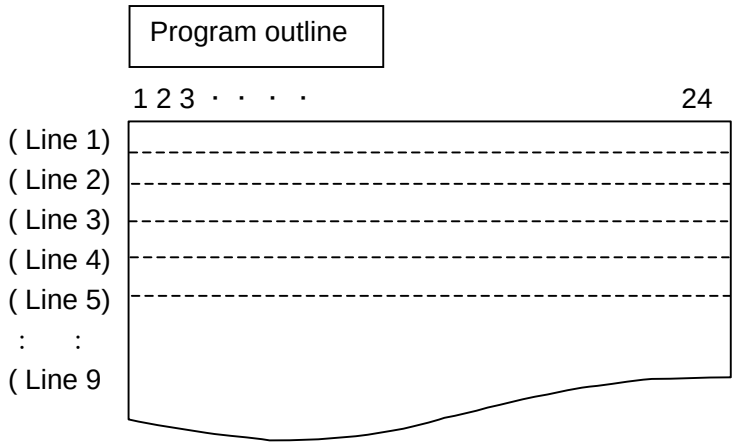
- □ Input the line number and press [END] to display the setting contents with the cursor on the first character.
- □ Press [END] to move to the next line.
- □ Press [SET] to confirm the setting.
- □ Press [CAN.] to clear all the printing data set for the line.
- □ To change the setting, press [CAN.] to clear the setting and then input a new setting.

(2) To clear all lines of the program data.

When Line ■ is displayed, press [SHIFT].

Line ■
ALL Clear
is displayed.

- □ Press [CAN.] to clear all lines of the program data and return to the previous display.
- □ Press [1] to set the default printing format and print the dummy data.
- □ Press [2] to set the date, time, number of times, gross weight, net weight, tare in the printing format.



Printing Items to be Programmed

Printing items that can be programmed are shown below.

□ Item No.: Input the item No. in the position where the item is to be printed. The displayed data example is displayed.

□ Displayed data example: Displayed in the appropriate number of columns. This can be used to check the printing position because the example is printed when printing the program setting contents.

Item No.	Item	Displayed data example	Number of columns
0	Day month year Month day year	00/00/2000	11 columns
1	Hour minute	11:11:	6 columns（24-hour system）
2	Channel No.	CH2	3 columns
3	Code No. (Note 1)	CD333333	8 columns
		CD33	4 columns
4	Number of times	#44444	6 columns
5	Gross weight (Note 2)	G_ _ 5555555kg	12 columns
6	Net weight (Note 2)	N_ _ 6666666kg	12 columns
7	Tare (Note 2)	T_ _ 7777777kg	12 columns
8	Weight value	88888888888g	12 columns
9	Space	_	1 column
SHIFT	While setting the printing items, press [SHIFT] to set the three characters shown below. When [SHIFT] is pressed, the right side of the Line No. turns on.		
Asterisk	*	*	1 column
Hyphen	-	-	1 column
Slash	/	/	1 column

Note 1: CD333333 for F13-1, F15-1 or F12=2, 3

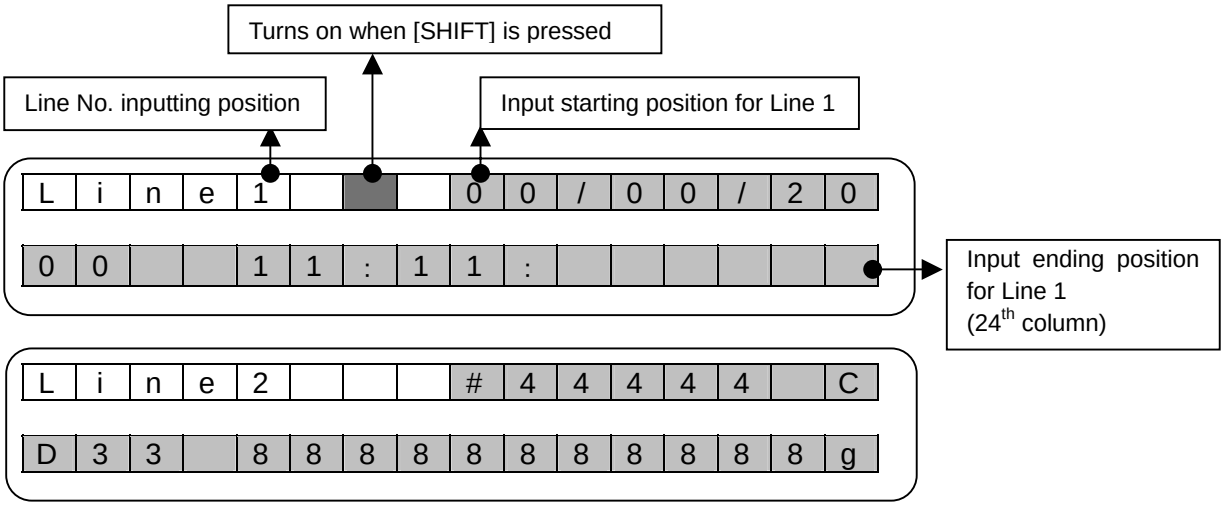
CD33 for F13-1, F15=0

Note 2: The second header of the data received is checked. When the header is wrong, the data will become invalid and will not be printed.

In case of weight value, the data received will be printed regardless of the header.

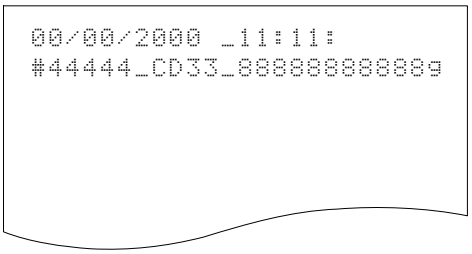
Displaying the Setting Contents

In the PROGRAM mode, the contents that are currently set are displayed.



Press [PRINT] to print the dummy data in the program printing format.

Printing example of the default program printing format



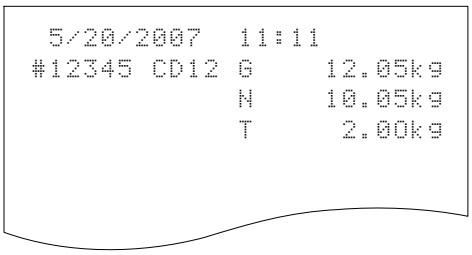
_ = 9: Space

Note:
- **The maximum number of columns for one line is 24. When it exceeds 24, the item input last is not accepted.**
- **When printing items are not set, pressing [SET] does not function and does not exit the setting mode. When all lines of the program data are cleared, be sure to set the printing items.**

Setting Example

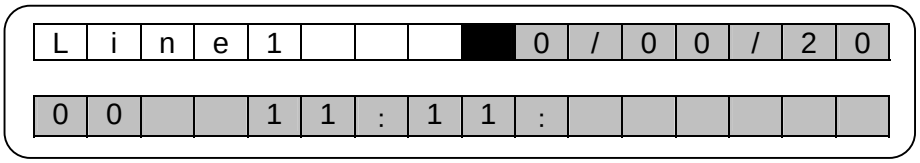
In the below example, the gross weight, net weight and tare data are received from the indicator and printed.

Printing example of the printing format to be set

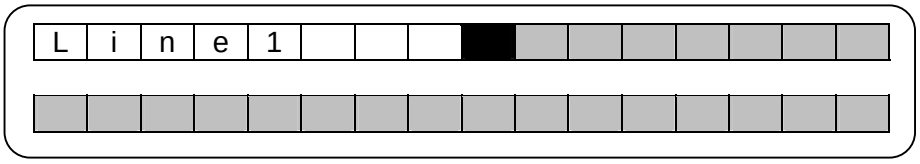


The setting is performed while clearing the contents by the line.

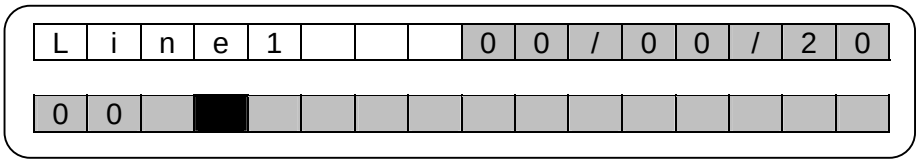
(1) In the setting mode, input “1” for Line to display the setting contents for the line 1 with the cursor blinking on the first column of the setting.



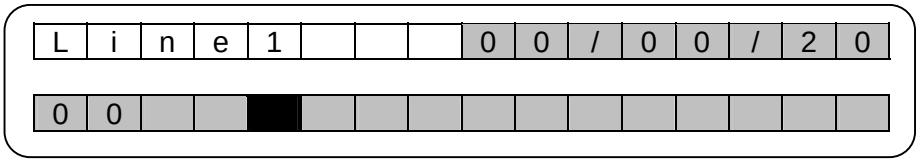
(2) Press [CAN.] to clear the setting contents.



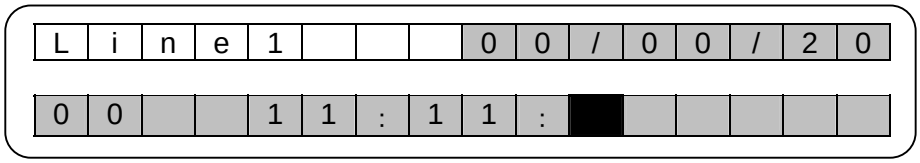
(3) Set the date and time. Press [0] to input the date.



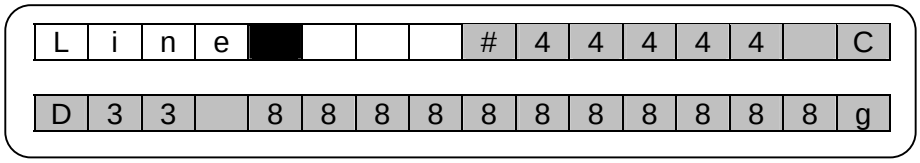
(4) After the date, a space is required. Press [9] to move the cursor one column to the right.



(5) Press [1] to input the time.

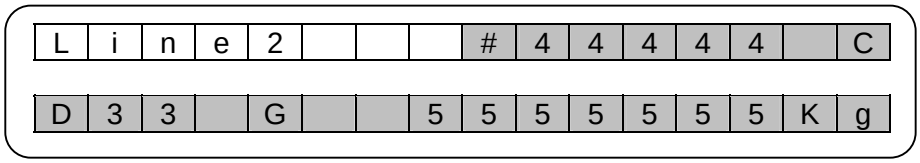


(6) Press [END] to display the setting contents for the line 2 with the cursor blinking on the line number. Press [END] to move the cursor on "#".

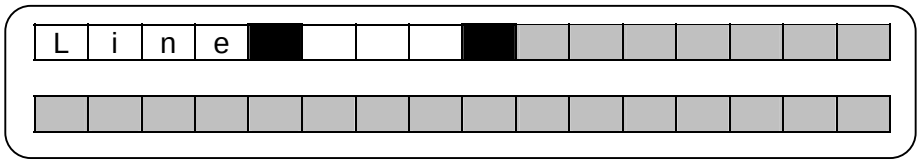


(7) Set the number of times, code number and gross weight.

- □ Press [4] to set the number of times.
- □ Press [9] to input one space.
- □ Press [3] to set the code number.
- □ Press [9] to input one space.
- □ Press [5] to input the gross weight.

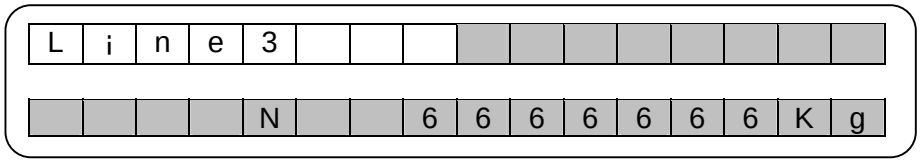


(8) Press [END] to display the setting contents for the line 3 with the cursor blinking on the line number. As no default setting is made for the line 3, the setting contents are blank and do not require clearing. Press [END] to move the cursor to the first column of the setting.

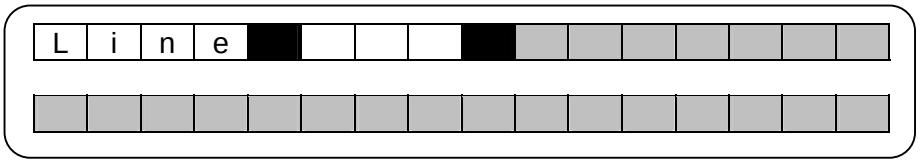


(9) Set the net weight.

- □ Press [9] 12 times to input 12 spaces to align the printing position.
  Press [6] to input the net weight.



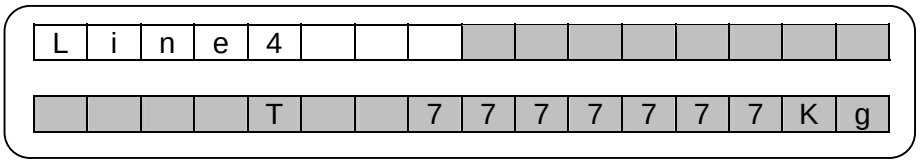
(10) Press [END] to display line 4 with the cursor blinking on the line number. Press [END] to move the cursor to the first column of the setting.



(11) Set the tare.

□ Press [9] 12 times to input 12 spaces to align the printing position.

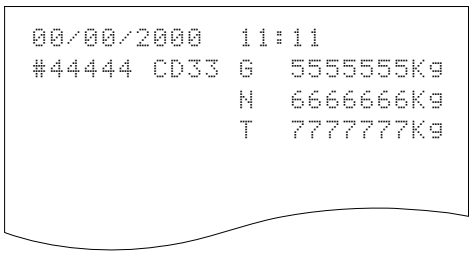
□ Press [7] to input the tare.



(12) Press [END] to display line 5 with the cursor blinking on the line number.

(13) Press [PRINT] to print the dummy data in the program printing format. Check the printing position and printing items.

Printing example of the set printing format



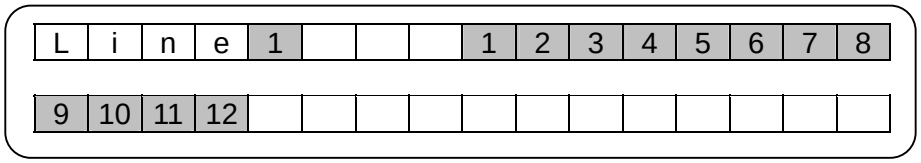
(14) When the printing position and printing items are all right, press [SET] to return to the PRINT mode.

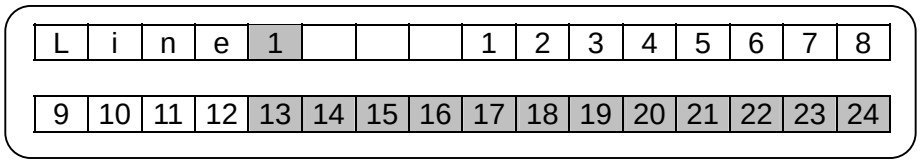
Enlarged Characters

Using the enlarged characters, the number of characters to be printed per line is 12 while 24 characters can be printed per line using the standard characters.

The setting procedure is the same as the printing format setting procedure.

(1) Because enlarged characters are double the size of standard characters, the printing format programmed on one line is actually printed on two lines. That is, line 1 sets the items for line 1 (the first 12 columns) and line 2 (the last 12 columns).

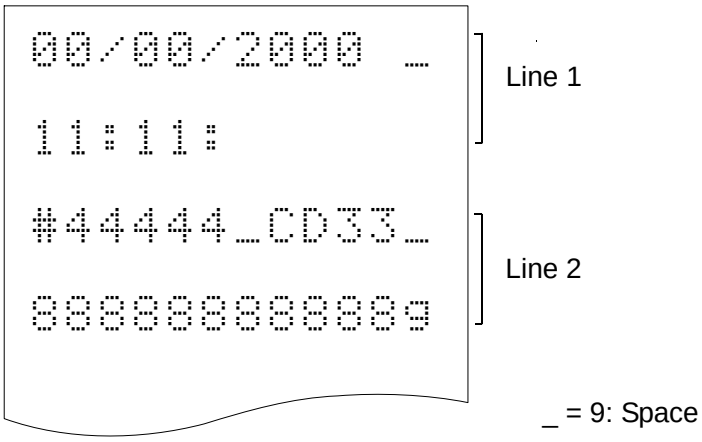




The line 2 sets the items for line 3 and line 4 and up to line 9, the maximum 18 lines can be set.

The setting contents are printed in characters set in F6.

Printing example of the default printing format



9-2 Setting the Printing Format by PC Communications (UFC_MODE)

The printing format for random printing can be set in the text (with an extension, .txt) from a PC. To use this, switch the input selector switch to RS-232C.

Compose a line of text using the Windows memo pad. To send the text: In Hyperterminal click “Transfer” and “Send Text File”. Then, select the text and press “Open”. The text will be sent.

Setting Procedure

(1) Press [FUNC] to enter the UFC mode.

```
UFC   MODE
      WAIT   TEXT
```

is displayed.

(2) The printing format can be set upon receiving the text from the PC.

(3) When valid text is received from the PC, the printer sets the printing format as received and prints the dummy data automatically in that format.

(4) When a communications error occurs or the text received is not valid, an error message is printed. Check the data received.

(5) When the setting contents are correct, press [SET] to return to the PRINT mode.

Command list

Printing data		Command	Columns	Printing example / Description
1	Month day year	$DT	11	12/23/2007_ _: Space
2	Hour minute	$TM	6	10:13_ _: Space
3	Channel No.	$CH	3	CH2
4	Code No.	$CD	8	2-digit or 6-digit is automatically recognized by the function setting. CD12/CD123456
5	Number of times	$NO	5	#1234
6	Gross weight	$GR	12	G_+1234567kg (unit received)
7	Net weight	$NT	12	N_+1234567kg
8	Tare	$TR	12	T_+1234567kg
9	Weight	$WW	12	+1234567890g (weight value and unit received)
10	Space (_)	$SP	1	Space
11	Enlarged characters used	$ON	——	Data set after this command is printed by enlarged characters.
12	Enlarged characters not used	$OF	——	Data set after this command is printed by standard characters.
13	ANK characters	Enclosed with ’ ’	——	Specify the data enclosed using ’and ’. (ASCII code 20H to 7FH)
14	Other than ANK characters	#**	——	Characters other than ANK characters that can be used are specified as #** (**=ASCII code).
15	Initialization	CL	——	Restores the printing format to the default settings. When CLCRLF is received, the default format is restored and the dummy data is printed in the default format.
16	CR	$CR	——	CR (Return) (0D Hex)
17	LF	$LF	——	LF (Line feed) (0A Hex)

Printing Format in Text

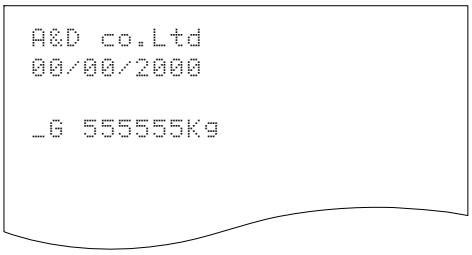
The printing format can be set in the text (with an extension, .txt) made by using PC memo pad. Specify the number of characters to be printed according to the setting of F6.

Standard characters

Example text

```
PF1, ’A&D  co.Ltd’$CR$LF
PF2,  $DT$CR$LF
PF3,  $SP$CR$LF
PF4,  $SP$GR$CR$LF
```

Printing example of the dummy data



(1) PF1, ‘A&D co. Ltd’ CRLF

PF1: Specifies line 1. Then, specify the characters to be printed. At the end of line 1, specify CRLF and press [ENTER] to change lines.

(2) PF2, DTCR$LF

PF2: Specifies line 2. $DT: Specifies to print the date

(3) PF3, SPCR$LF

PF3: Specifies line 3. SPCR$LF: Specifies one blank line.

(4) PF4, SPGRCRLF

PF4: Specifies line 4. $SP: Specifies one space. $GR: Specifies the gross weight.

(5) The lines to be specified are from PF1 to PF9. Specify in order starting with PF1. Otherwise the error message “F_ERROR” is displayed. To have one blank line, write SPCR$LF after specifying the line.

Enlarged characters

(1) The number of characters per line is 12. Specify the items to be printed accordingly.

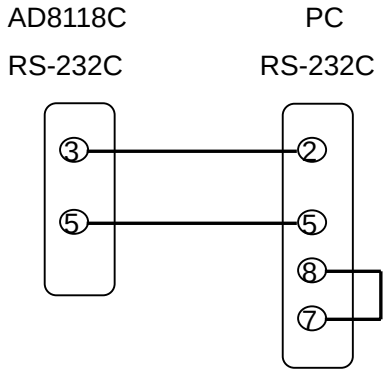
(2) The lines to be specifies are from PF1 to PF9.

Error Messages

An error message is displayed when the text received is not valid.

Error message		Description
1	F_ERROR	The number of characters per line is exceeded. PF1 is not specified or specifying order is not correct.
2	L_ERROR	The number of lines exceeded 9.
3	C_ERROR	An invalid command is received.
4	M_ERROR	Characters that the printer can not print are received.

Communications Cable



The printer is to be connected via RS-232C. Set the input selector switch to RS-232C.

9-3 Setting the Code Conversion Table

Setting Procedure

(1) Press [CODE] to enter the code conversion table setting mode.

```
CODE 2D ■1
     6D * * * * * *
```

2-digit code number “01” and 6-digit code number to be converted are displayed.

99 code number from 01 to 99 can be registered.

Press [END] to confirm the setting.

Press [CAN.] to clear the setting and to return to the previous setting.

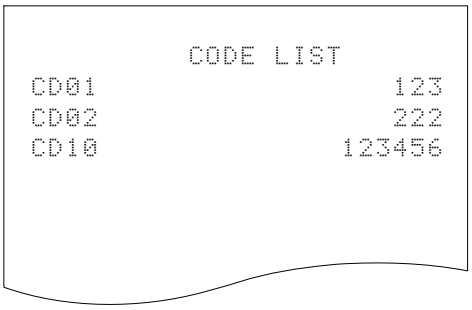
When F13=1 (2-digit code number), F15=1 is enabled regardless of F14 setting.

(2) Input the 2-digit code number. For example, to input “06”, input [0] [6] and [END]. The input is confirmed and the cursor moves to the lower line of the 6-digit code number.

(3) The current 6-digit code number or “6D 0” when the 6-digit code number is not registered is displayed. Input the 6-digit code number. For example, to input “123”, input [1] [2] [3] and [END].

(4) When [END] is pressed, the setting is confirmed and the next 2-digit code number is displayed.

(5) Press [PRINT] to print the list of conversion table registered.



Recalling the Conversion Table

In random printing with F13=1, to convert the code number to 6-digit, read the conversion table to recall and print the 6-digit code number registered to the 2-digit code number.

This operation is available regardless of F14 setting.

When the 6-digit code number is not registered, “0” is printed.

10. SERIAL INPUT / CONTROL I/O

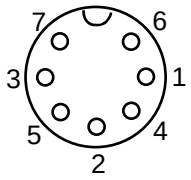
10-1 Serial Input Connection

Standard Serial Input (CH1 only)

The standard serial input can be switched between RS-232C and current loop by the input selector switch on the real panel. Select either one depending on the product being connected.

Connection table

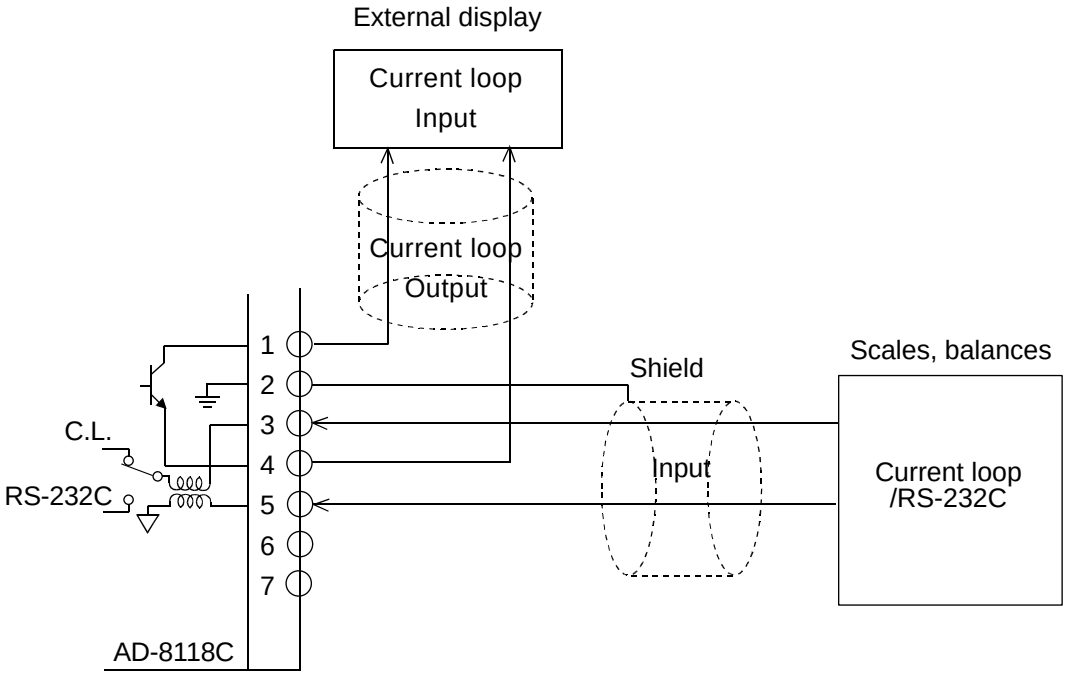
Pin No.	Symbol	Description
1	C.L.OUT	Current loop output
2	F.G.	Frame ground
3	Ser.IN+	Serial input + (TxD)
4	GND	Signal ground
5	Ser.IN-	Serial input- (SG)
6	I.C.	Connected internally
7	I.C.	Connected internally



View from the rear panel

□ Serial input uses both RS-232C and current loop. For RS-232C, pin 5 is signal ground. Connect the shield to pin 2.

□ Shielded twisted pair cable is recommended as the signal line.



Note: Standard serial input CH1 of the printer has a function which outputs the serial input directly by current loop. Devices such as a display can be connected by means of this. Even if the RS-232C input is used, output is by current loop.

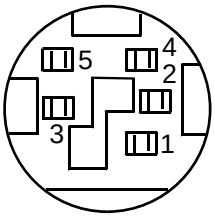
AD-8118C-02 Expansion Serial Input (CH2, CH3, CH4)

Switching between RS-232C and current loop can be performed by rewiring the connector.

Current loop output is not available for expansion serial input.

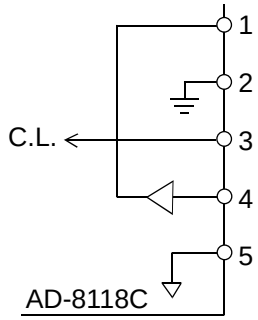
Connection table

Pin No.	Symbol	Description
1	CONV.OUT	RS-232C conversion output
2	F.G.	Frame ground
3	C.L. IN	Current loop input
4	RS IN	RS-232C input
5	S.G.	Signal ground

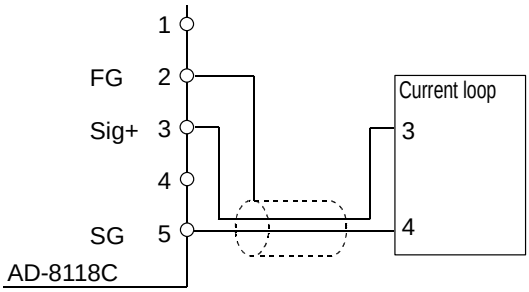


View from the rear panel

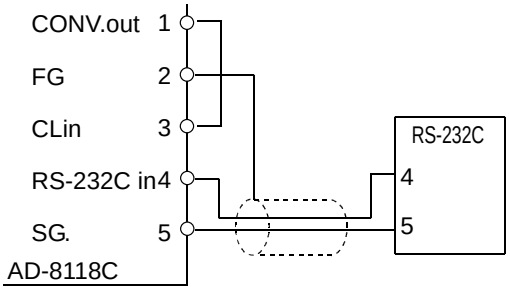
Interface circuit (common to all channels)



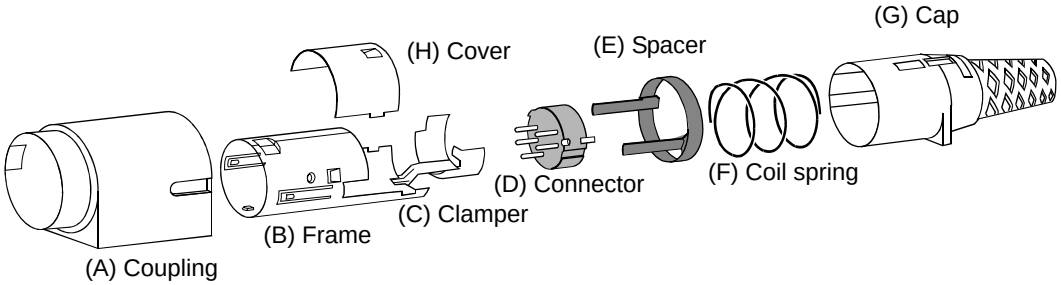
Current loop connection



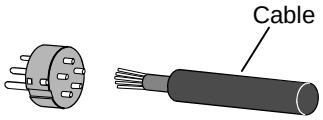
RS-232C connection

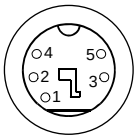


Mini DIN Connector Assembly Procedure



1. Insert the parts onto the cable in (G), (F), (E) order.
2. Connect the connector (D) to the cable.

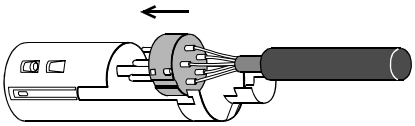




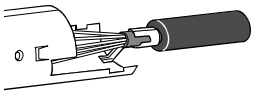
Front of the connector (D)

Note: Check the wiring at the time it is wired to the connector (D). Once assembled, the connector cannot be disassembled.

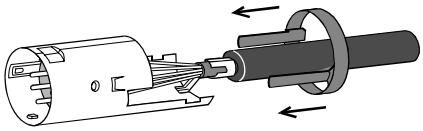
4. Insert the connector with the cable connected into the frame (B).



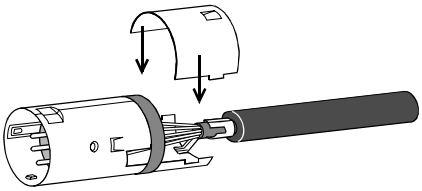
When the connector reaches the prescribed position, it is locked. Clamp the cable shield by the clamper (C).

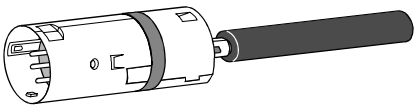


5. Insert the spacer (E).

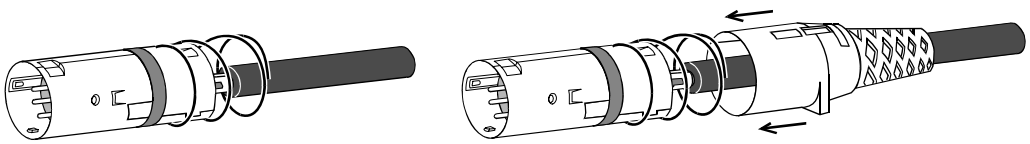


6. Place the cover (H) on the frame (B).

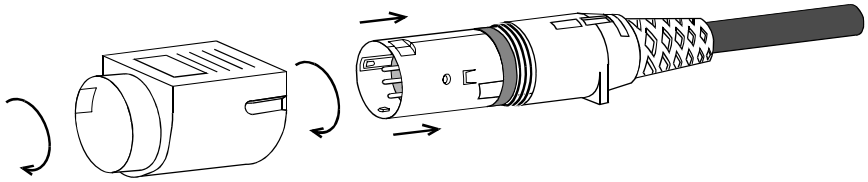




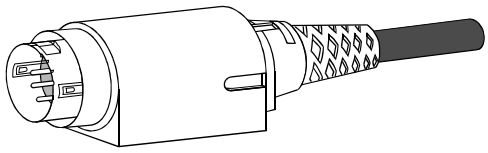
7. Insert the coil spring (F) into the frame (B). Then, insert the cap (G) onto the frame (B) and lock the cap.



8. Finally, hold the coupling (A) in the position shown in the figure and insert it forcefully onto the connector while grasping the spacer (E) and turning the coupling clockwise.



When the coupling (A) reaches the prescribed position, the entire connector is locked and the coupling (A) slides.



10-2 Control I/O Connection

Standard Control I/O

A Control I/O is provided to the AD-8118C Universal Printer (standard) and AD-8118C-02 Expansion Input Option Board (option). Please note that the signal contents are different when the number of input channels in F19 setting is less than three and three or more. When an option board is not installed, the signal contents for less than 3 are applied.

	Less than 3	3 or more
Pin No.	Contents	Contents
A1	1	1
2	2	2
3	4	4 CH1 Code input
4	8 CH1 Code input	8
5	10	10
6	20	CH4 Print command input
7	40	CH3 Print command input
8	80	CH2 Print command input
9	CH1 print command input	
10	Paper feed command input	
11	Subtotal print command input	
12	Grand total print command input	
B1	Grand total clear command input	
2	Interval print ON	
3	Batch print command input	
4	Lot print command input	Common
5	Busy output	
6	Print announcement output	
7	NC	
8	Output COM	
9	NC	
10	Input COM	
11	Input COM	
12	F.G.	

AD-8118C-02 Control I/O

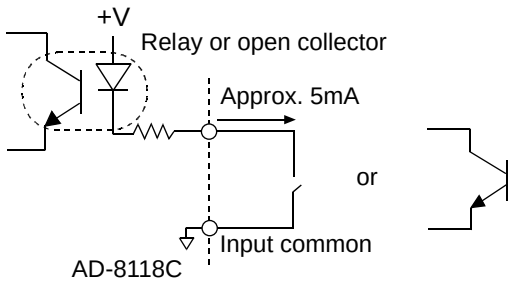
	Less than 3		3 or more	
Pin No.	Contents		Contents	
A1	1		1	
2	2		2	
3	4		4	CH2 Code input
4	8	CH2 Code input	8	
5	10		10	
6	20		1	
7	40		2	
8	80		4	CH3 Code input
9	CH2 Print command		8	
10	(*Note)		10	
11	(*Note)		1	
12	(*Note)		2	
B1	(*Note)		4	CH4 Code input
2	(*Note)		8	
3	(*Note)		10	
4	(*Note)			
5	CH2 Busy output			
6	CH3 Busy output			
7	CH4 Busy output			
8	Output COM			
9	NC			
10	Input COM			
11	Input COM			
12	F.G.			

(*Note) Not to be connected

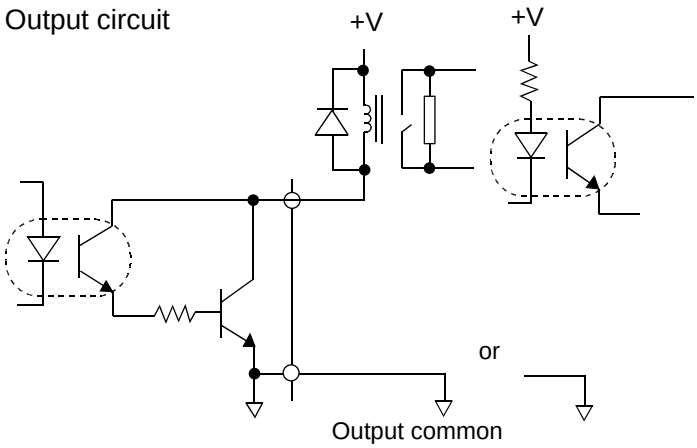
Control I/O Connection

The specifications are common for both the standard control I/O and the AD-8118C-02 control I/O.

Input circuit

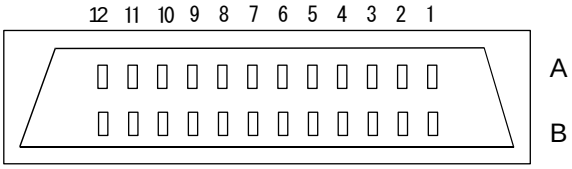


Output circuit



The input and output circuits are shown above. Be careful of the minimum applicable load when connecting the input. Receive the output by auxiliary relay, solid-state relay (SSR), etc. Use a relay with a coil voltage of 12 to 24VDC and a current of 50mA or less. (Omron MY Series DC24, etc.)
When the environment is noisy, connect the cable shield to frame ground.

Unless otherwise specified, the input is operated by connecting an input to input common and when the output is operated, the output transistor is turned ON. Inputs other than code input are pulse inputs. Input a pulse width of at least 200 msec.
Code input is negative logic.



View from the rear panel

Control I/O Operation

Input

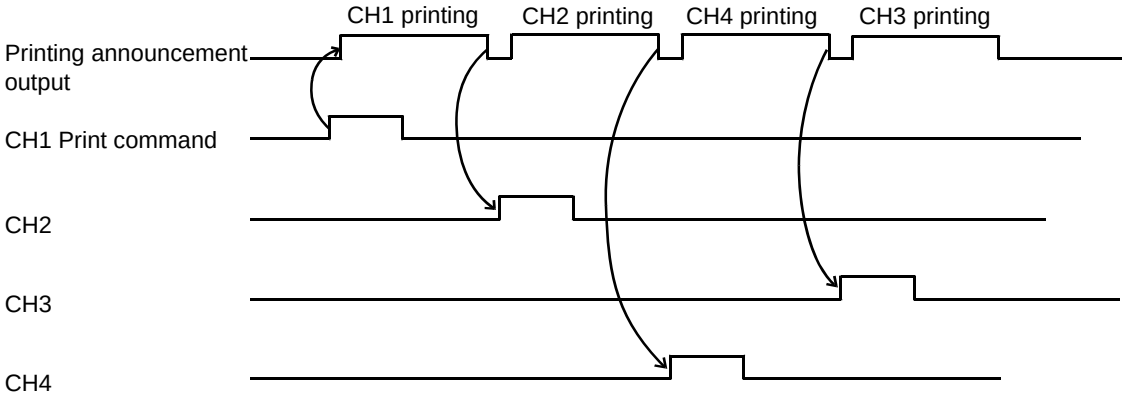
- □ Code input — When F14 is set to 1, the code No. input from the control I/O becomes valid. When two or less channels are connected, the code No. can be input in 2 digits. When three or more channels are connected, the code numbers that can be used are 0 to 19.
- □ Print command* — When this input is turned ON, the first data that enters within the next three seconds is printed or added. However, this applies only when the F10 print timing is set to manual.
- □ Paper feed command — Feeds the paper by one line.
- □ Subtotal print command — Prints the subtotal up to that command point. After printing, the subtotal value is not stored, but is cleared. This command cannot be used in the batch print mode.
- □ Grand total print — Prints the grand total up to that command point. After printing, the cumulative total values (subtotal, grand total) are not cleared.
- □ Total clear — Clears the total (subtotal and grand total) value up to that command point. "*CLEAR" is printed.
- □ Interval print command — When this input is turned ON, interval printing is performed. I/O has priority over key input.
- □ Batch print command — With F9 set to 2 (batch printing), when this signal is turned ON, batch printing is performed.
- □ Lot printing command — With F9 set to 2 (batch printing), when this signal is turned ON, lot printing (batch printing total) is performed.

Inputs indicated by the * do not operate at automatic printing. At dump printing, inputs other than paper feed do not operate.

Output

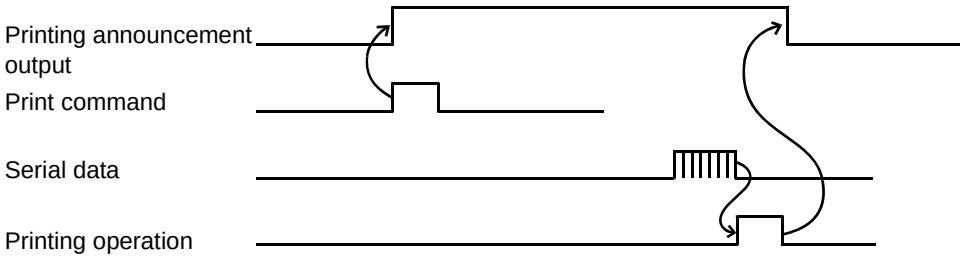
- □ Busy — When the data buffer exceeds 75 lines, this output is turned ON.
- □ Print announcement — When the printing operation is performed, this signal is turned ON. At this time, control inputs are not received. Therefore; input control inputs, when this output is off.

Timing Chart



- □ Always input the control signals when the print announcement output is off or set the printer to the automatic print mode (F10=4 or 6) and input a print command to an indicator set to the manual print mode.
- □ Each command input is judged by edge and is operated only once when it is turned ON.
- □ When an input is turned ON (connected to input common) for more than 200ms, it is accepted.
- □ The print announcement output is not necessarily turned ON only during the printing operation.
  At manual printing, serial data is not input within three seconds after a print command is input, the print announcement output is turned ON for three seconds after the print command input.

Timing Chart



11. DATA BUFFER

The printer has a data buffer for 80 data so that data can be input even while the printer is printing.

When data temporarily overlaps and the printing speed is exceeded, the data is stored in this buffer. When printed, that data is cleared.

When this buffer exceeds 75 lines, the I/O output busy signal is turned ON and when it exceeds 80 lines, “B_ERROR” is printed one time.

When the buffer drops to 75 lines or less during printing, when it exceeds 80 lines again, “B_ERROR” is printed again.

Since the printing speed is approximately 1.7 lines/second (the printing speed of one data is for the number of lines including the time printed and the lines fed), do not input data at a speed exceeding this.

When the power is turned off before the data contents stored in the data buffer are printed, the data contents are cleared.

12. PRINTING SAMPLES

12-1 Random Printing

Default printing format (2-digit code number)

```
 5/20/2007  12:34
#12345 CD12 G     12.34kg
```

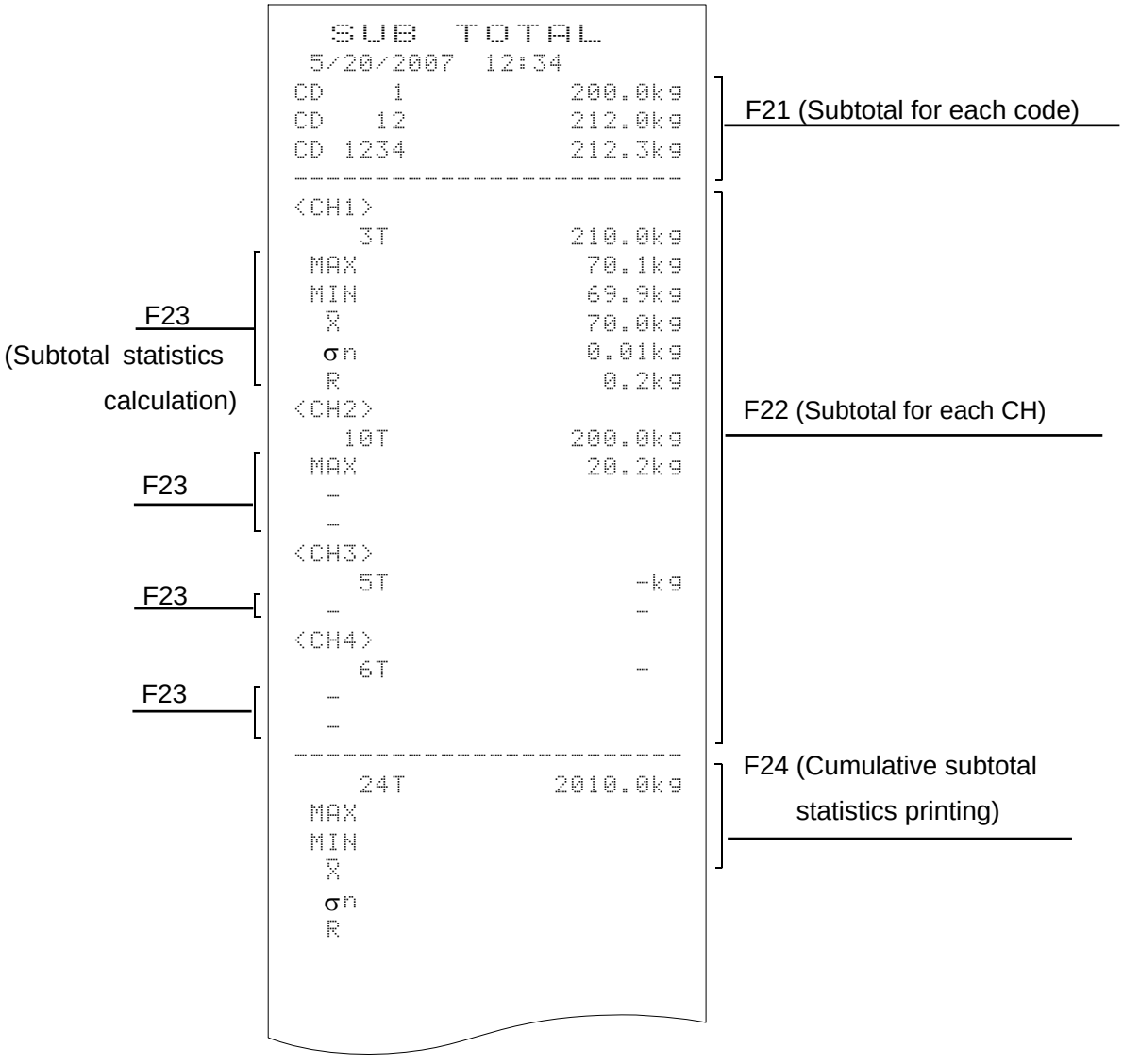
6-digit code number

```
 5/20/2007  12:34
#12345 CD123456
            G     12.34kg
```

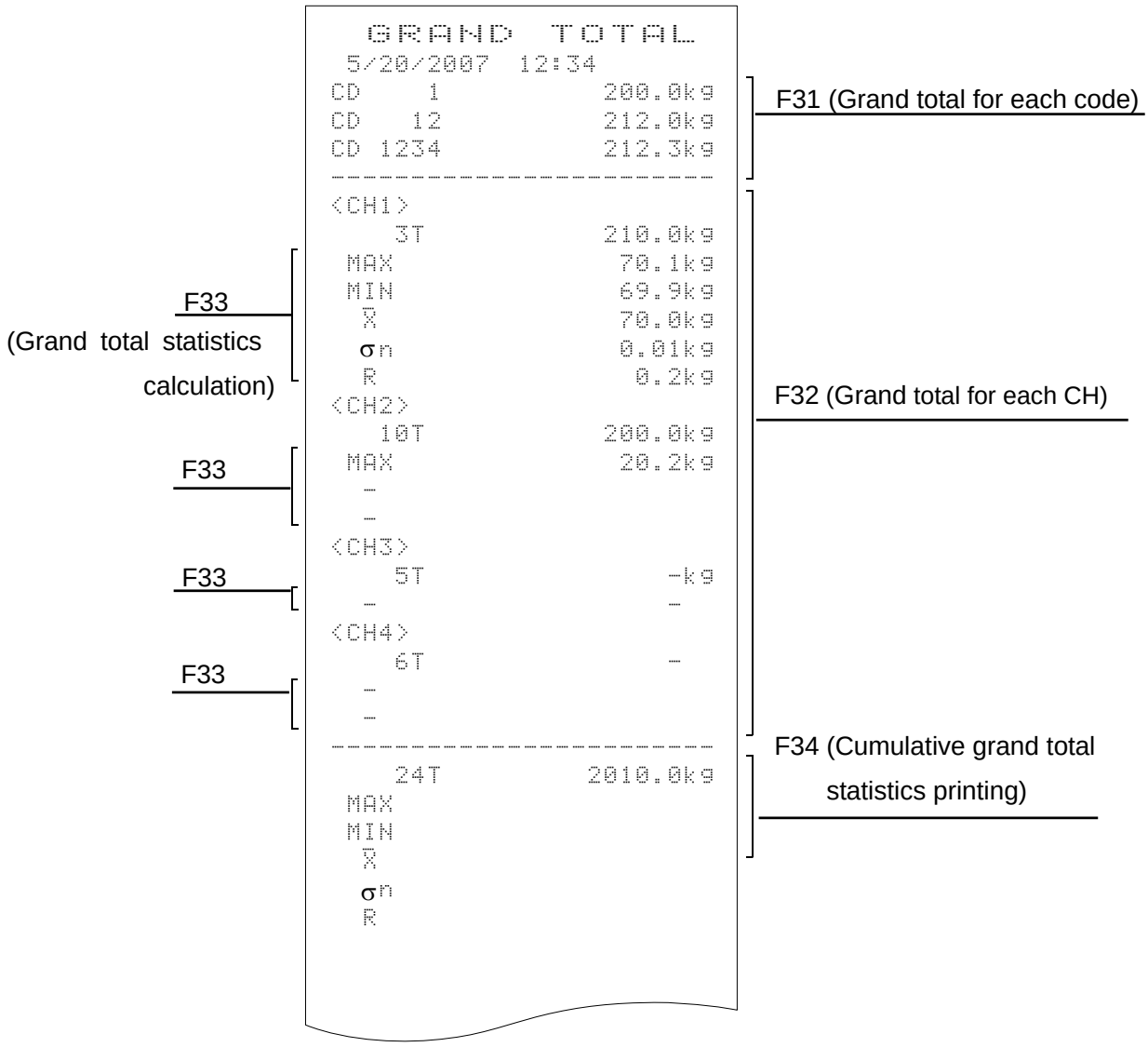
When the 6-digit code number is selected in F13 and F15 settings, the default printing format is automatically changed to the format shown above.

The printing format can be set arbitrarily in the PROGRAM mode.

12-2 Subtotal Printing

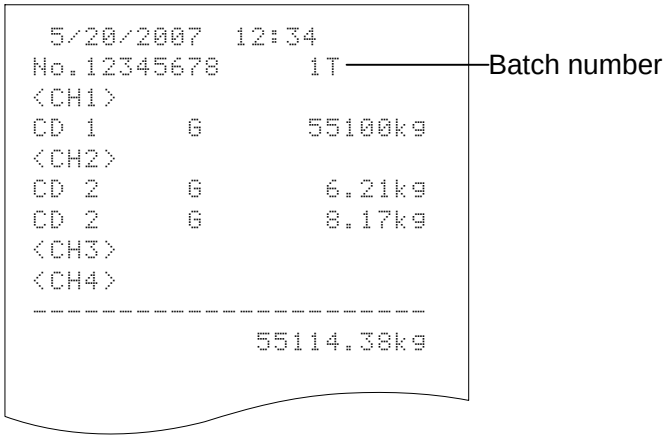


12-3 Grand Total Printing

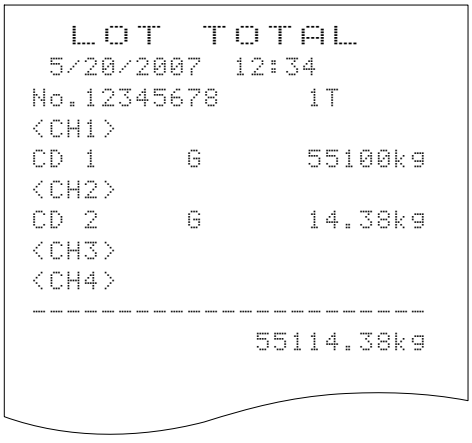


12-4 Batch Printing (F3=1, F9=2)

Batch printing



Lot printing



13. ERROR PRINTING

Error printing for random printing, batch printing and interval printing is shown below.

In dump print mode, error printing is not performed.

Random printing	Description
T ERROR	At manual printing (F10=1、3), data is not received within 3 seconds after a print command input.
U ERROR	The unit is not the same as the last data. ・Prints “U ERROR” after printing the weight value received. ・The weight value received is added to the subtotal/grand total in the unit used for the last data.
S ERROR	The subtotal/grand total weight is overweight. ・Prints “S ERROR” after printing the weight value received. ・The weight value received is not added to the subtotal/grand total.
O ERROR	Data is overweight.
F ERROR	Data format does not match. ・The number of characters per line is exceeded. ・PF1 is not specified or specifying order is not correct.
I ERROR	Data outside the set limit is input. ・F5=0 (-, unstable data) ・Data other than that is set at F11
B ERROR	Data buffer overflows.
R ERROR	Other than 00 to 99 is input as code input from the control I/O. In this case, 0 is considered as the code number; printing and addition will be performed.

Batch printing	Description
U ERROR	The unit is not the same as the last data. ・Prints only “U ERROR” after receiving the weight value. ・The weight value received is added to the lot printing/grand total in the unit used for the last data.
S ERROR	The lot printing/grand total weight is overweight. ・Prints only “S ERROR” after receiving the weight value. ・The weight value received is not added to the lot printing/grand total.

Interval printing	Description
U ERROR	The unit is not the same as the last data. ・Prints “U ERROR” after printing the weight value received. ・The weight value received is added to the subtotal/grand total in the unit used for the last data.
S ERROR	The subtotal/grand total weight is overweight. ・Prints “S ERROR” after printing the weight value received. ・The weight value received is not added to the subtotal/grand total.

14. KEY OPERATION

Test mode	To enter the test mode, press and hold [7] and [8], and turn on the power. "CHECK_MODE" will be displayed and the program version number will be printed. To return to the PRINT mode, turn off the power and turn on the power again.
Initialization	To initialize, press and hold [7] and [9], and turn on the power. ・Restores the function settings to the default settings. ・Initializes the printing format and interval timer setting. ・Clears 6-digit code number data, subtotal/grand total, data buffer contents. Release the keys when "INIT_ALL" is displayed. After initialization, the printer returns to the PRINT mode.
Clearing data in random printing (F3=1/F9=1)	Press and hold [CAN.], and press [PRINT] to print "* CANCEL" and clear the data added last in memory. ・Only one data that is added last can be cleared.
Clearing data buffer in batch printing (F3=1/F9=2)	Press and hold [CAN.], and press [PRINT] to print "* CANCEL" and clear the data in the data buffer. Note that the total value will not be cleared as the data received is added.
Clearing grand total/Lot printing data	Press and hold [CAN.], and press [G.TTL] to print "* CANCEL" and clear grand total and lot printing contents. ・Clears both the grand total data and the lot printing data. ・When clearing the grand total data, the batch printing data will not be cleared.

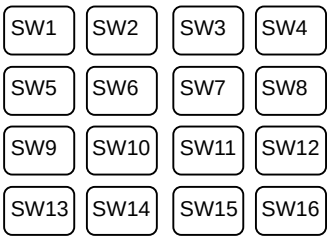
15. TEST MODE

To enter the test mode, press and hold [7] and [8], and turn on the power.

“CHECK_MODE” will be displayed and the program version number will be printed.

Press one of the numerical keys [0] to [9] to select a test function.

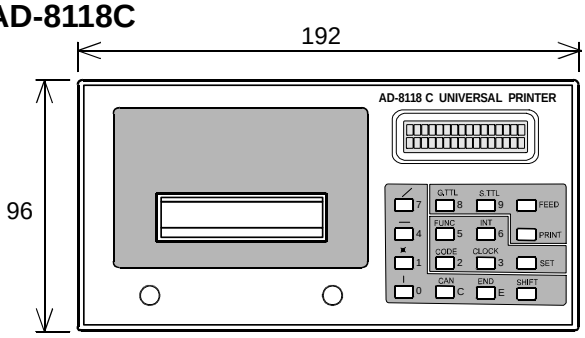
To return to the PRINT mode, turn off the power and turn on the power again.

[FEED]	Feeds the paper.
[G.TTL]	Check printing Prints all the characters, figures, units and symbols that are used by the printer.
[S.TTL]	Key check mode The key check mode displays “KEY CHECK” in the lower part of the LCD. SW4 corresponds to [FEED]. When each key is pressed, the key number is displayed in the lower part of the LCD.  Press [SW16] ([SHIFT]) to display “SW16” for approximately 2 seconds and exit the key check mode.
[4]	Standard control I/O check mode The standard control I/O check mode displays “I/O CHECK” in the lower part of the LCD and standard control I/O check will be performed. Each time an input is received, its data is printed on one line. Press [SW16] ([SHIFT]) to exit the standard control I/O check mode.
[5]	Option control I/O check mode The option control I/O check mode displays “OPTION I/O CHECK” in the lower part of the LCD and option control I/O check will be performed.. Each time an input is received, its data is printed on one line. Press [SW16] ([SHIFT]) to exit the option control I/O check mode.
[PRINT]	Data received by each channel printing “ALL PRINT CH No?” is displayed in the lower part of the LCD. Select a channel number to print the data that the channel receives. [1]→Selects CH1. [2]→Selects CH2. [3]→Selects CH3. [SET]→Selects CH4. Press [SW16] ([SHIFT]) to exit this mode.
[SHIFT]	Exits each check mode and returns to the test mode.

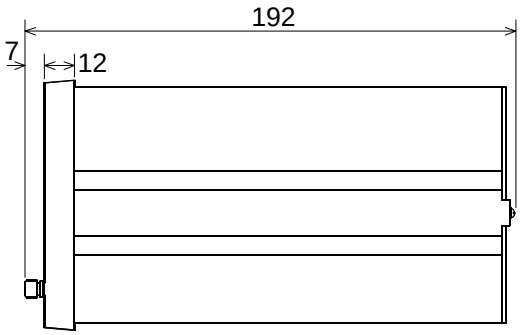
16. APPENDIX

16-1 External Dimensions/Panel Cutout Dimensions

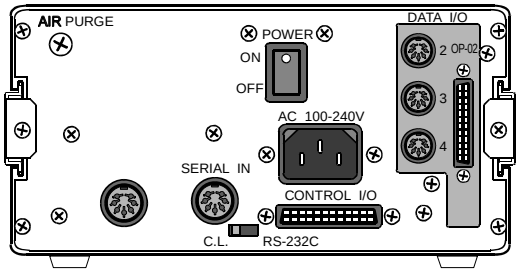
AD-8118C



Front view



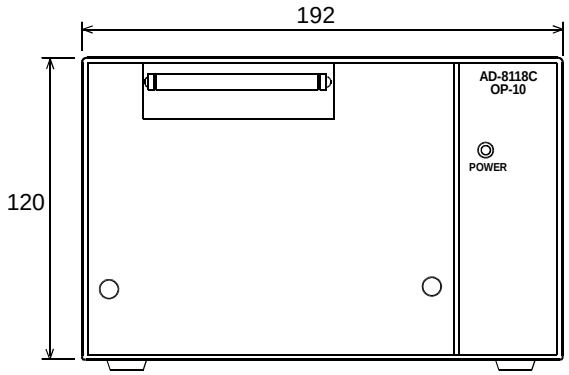
Side view



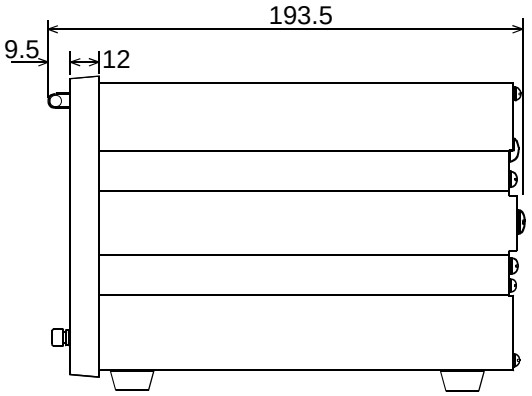
Rear view

Panel cutout dimensions

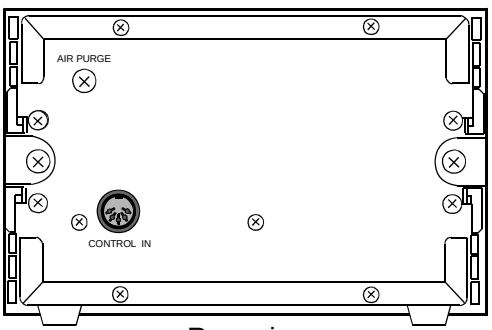
AD-8118C-10



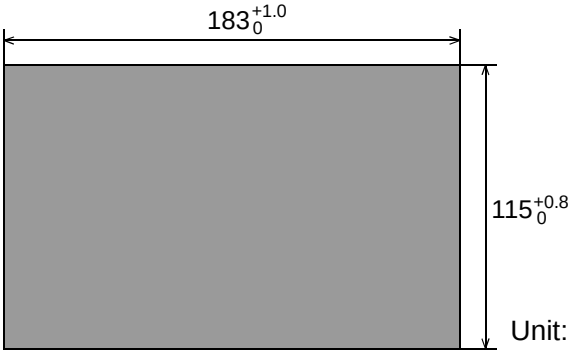
Front view



Side view



Rear view



Panel cutout dimensions

Unit: mm

16-2 Character Code Table

HEX.NO	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	NUL		(SP)	0	@	P	‾	p	μ	⊥						
1			!	1	A	Q	a	q	⎯	⊤						
2			"	2	B	R	b	r	▬	⊣						
3			#	3	C	S	c	s	▬	⊢						
4			$	4	D	T	d	t	▬	‾						
5			%	5	E	U	e	u	▬	–						
6			&	6	F	V	f	v	▄	∣						
7			'	7	G	W	g	w	▄	∣						
8			(	8	H	X	h	x	∣	⌜						
9			)	9	I	Y	i	y	∣	¬						
A	L F		*	:	J	Z	j	z	▌	⌙						
B		ESC	+	;	K	[	k	{	▌	⌋						
C			‚	<	L	¥	l	∣	▮	⌜						
D	C R		–	=	M	]	m	}	▮	⌝						
E			▪	>	N	^	n	~	■	⌞						
F			⁄	?	O		o	Σ	+	⌟						

MEMO