TM-2480
TM-2481

INSTRUCTION MANUAL

Printer Terminal

A&D

A&D Company, Limited

⚠ This is a hazard alert mark.

This mark informs you about the operation of the product.

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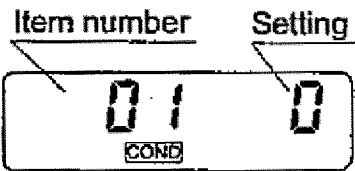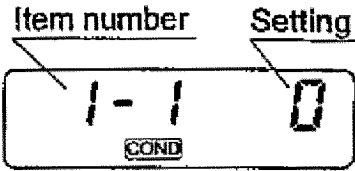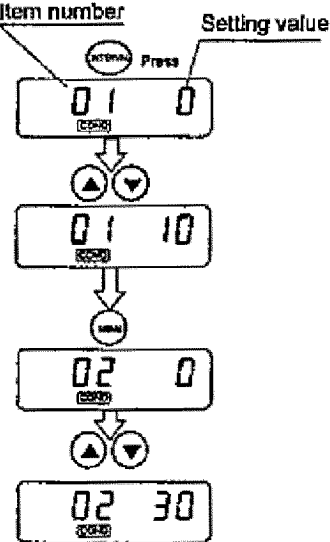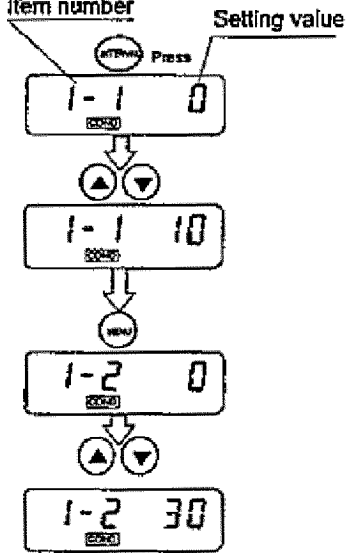
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Correction Sheet

This is correction sheet for the printer terminal instruction manual of TM-2480 and TM-2481, version 1600-1A-IE.

Page	Incorrect	Correct
42	**10.3.4 Alarm Setting for Measurement Time** Item number Setting value `01   0` COND	**10.3.4 Alarm Setting for Measurement Time** Item number Setting value `1-1   0` COND
42	Item number 01 02 03 04 05 06 07 08 09 10 11 12	Item number 1-1 1-2 2-1 2-2 3-1 3-2 4-1 4-2 5-1 5-2 6-1 6-2

43	Item number Setting value
	Press
	`01   0`
	↓ ▲▼
	`01   10`
	↓
	`02   0`
	↓ ▲▼
	`02   30`
		Item number Setting value
		Press
		`1-1   0`
		↓ ▲▼
		`1-1   10`
		↓
		`1-2   0`
		↓ ▲▼
		`1-2   30`

Page	Incorrect	Correct
9		**Symbols**

⏻	Turning on / off the recorder.
⎓	Direct current.
∿	Alternating current.
1999	Date of manufacture.
⚠	Attention symbol. "See instruction for use".
▣	Class II equipment.
C€0366	CE marking.
SN	Serial number.

Note:

The following function is disabled on the TM-2480/TM-2481 Printer Terminal.

On the UA PC series (MODEL 2), the alarm setting function is disabled.

Related pages :
Chap. 10.3 Model 2, Operation and Setting – page 37 (shown below)
Chap. 10.3.4 Alarm Settings for Measurement Time – page 42
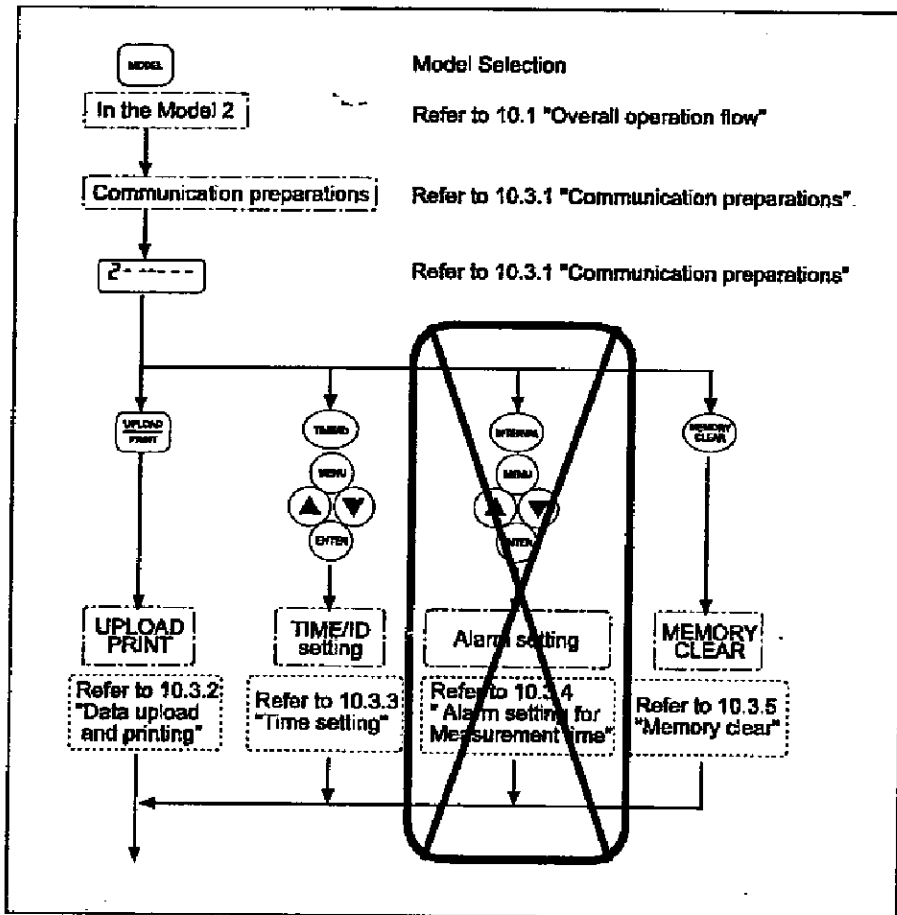
Contents

1. Compliance

1.1. Compliance with European Directive 93/42 EEC for Medical Product

The device conforms to European Directive 93/42 EEC for Medical Products. This is evidenced by the CE mark of conformity accompanied by the reference number of a designated authority.

1.2. Compliance with FCC Rules

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. (FCC = Federal Communications Commission in the U.S.A.)

2. Safety

⚠ Caution

Printer Terminal
- Be sure to read the instruction manual of the connected blood pressure monitor before use.

Batteries
- Use alkaline batteries in the printer. Use of other types of batteries may cause reduced printer performance, damage, or fire.
- Do not mix and use old and new batteries.
- When the printer will not be used for a long period of time, remove the batteries. Batteries kept in the printer for a long period may leak and cause damage.

Storage Location
Do not store the printer in :
- Locations where water or other fluids may get on or into the printer.
- Locations with high temperature or humidity.
- Locations in direct sunlight.
- Locations where the printer will be subject to excessive vibration or shocks.
- Locations with dust, salt, sulfur, or other contaminants.

Repair

Do not allow the case to be opened by anyone other than authorized service personnel. This will void the warranty and may cause damage to the printer or fires. When repairs are necessary, contact the retailer where you purchased this product or yours nearest A & D representative.

Cleaning

When the printer terminal requires cleaning, gently wipe with a cloth dampened with water or a neutral cleanser.

3. Packing list

Package Content

Confirm that the following items are in the package.

Printer terminal	
Thermal paper:	1 roll
Communication cable:	1
AC adapter:	1
Instruction manual:	1

4. Introduction

Thank you for purchasing the Printer Terminal (TM-2480/TM-2481) from A & D. This manual was written for the TM-2480/TM-2481. Please read the manual carefully before using the unit in order to ensure a sufficient understanding of the printer terminal and provide proper use. Store the manual in a readily available location.

5. Features

- The printer can be used both ambulatory blood pressure monitors and blood pressure monitors used in the home.

- Blood pressure measurement results can easily be printed.

- The TM-2481 has an infrared communication function.

- When an ambulatory blood pressure monitor with infrared communication functions is used, measurement data can be transferred without a cable (TM-2481 only).

- The settings of clock and automatic measurement functions can also be input in blood pressure monitors.

- Applicable blood pressure monitors of the TM-2430 series.
  The TM-2430 series is "The portable automatic blood pressure monitors".

  - Every 24 hours the unit statistically processes blood pressure, pulse, and pressure load data and then prints the results.

  - Every 24 hours the blood pressure, pulse, and pressure load data are printed as trend graphs.

  - Statistical processing is done to calculate the average value and standard deviation for systolic pressure, diastolic pressure, and pulse rate. The results are then printed.

  - The pressure load is calculated for systolic and diastolic pressure using a surface area that exceeds a freely set value. (Units: mmHg•h)

  - The basic period for statistical processing is 24 hours. Results can also be printed for interval blocks and freely set waking and sleeping periods.

- Applicable blood pressure monitors of the TM-2431 series.

  The TM-2431 is "The portable blood pressure monitor with infrared communication function".

  - Data can be read and settings made through infrared communications without a cable connection (TM-2481 only).

- Applicable blood pressure monitors of the UA PC series and UB PC series.

  The UA PC series is "Principally upper arm blood pressure monitor for family use" and the UB PC series is "Wrist blood pressure monitor for family use".

  - Every month the unit statistically processes blood pressure data and pulse data and then prints the results.

  - Every month the blood pressure data and pulse data are printed as trend graphs.

  - Statistical processing is done to calculate the average value and standard deviation for systolic pressure, diastolic pressure, and pulse rate. The results are then printed.

  - The number of times the systolic/diastolic pressure exceeds 140/90 is counted. When measurement data for two months or more is present, all blood pressure data is printed. Then all blood pressure trend graphs are printed. Finally, all pulse data trend graphs are printed.

6. Specifications

Power   AC adapter or 6 x alkaline batteries
                                     (type LR6, type AA, Mignon)

Power consumption   9.6W max.

Display   LCD

Printer   Serial thermal printer

Print speed   Approx. 1 line/sec.

Printer paper   50mm diameter X 58mm width

Communication   Serial communications: EIA RS232C standard based
functions   Infrared communications: IrDA SIR1.0 standard based
                                                                          (TM2481 only)

Operating   +10 ~ +40°C 85%RH or less
temperature and   (however, there must be no condensation)
humidity ranges

Storage temperature   -10 ~ +55°C
and humidity ranges   95%RH (however, there must be no condensation)

External dimensions   TM-2480: Approx. 220mm (W) X 130mm (D) X 85mm (H)
                                     TM-2481: Approx. 220mm (W) X 180mm (D) X 90mm (H)

Weight   TM-2480: 530g
                                     TM-2481: 580g

Accessories   Printer paper, communication cable, AC adapter

LCD with all segments lit

Pocket for insertion
(TM-2481 only)

Display

Paper cover

Printer paper

Key operation section

Communication
cable connector

AC adapter
input jack

Battery cover

Quick reference

Rear of main unit

Bottom of main unit
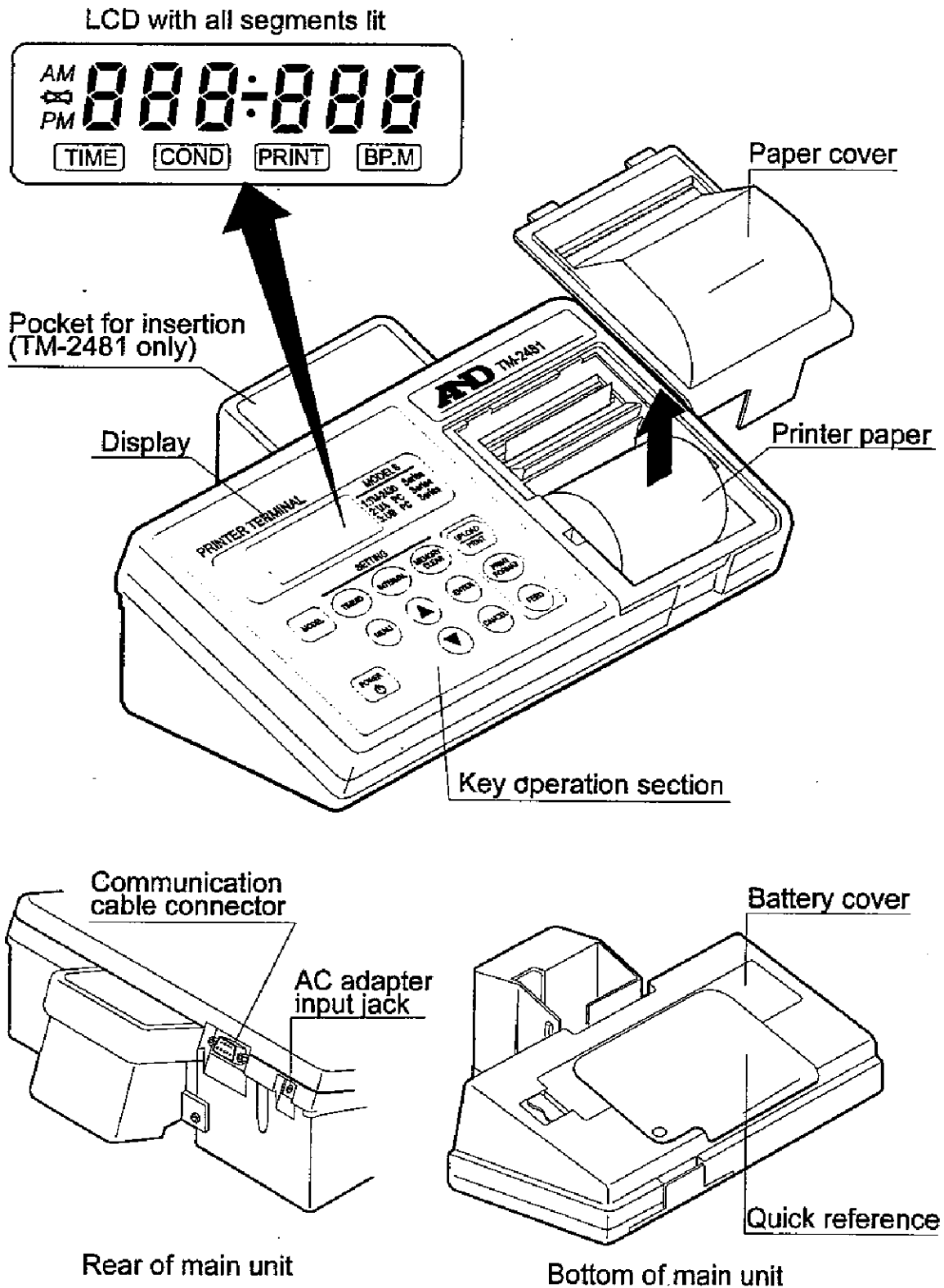
Connected Model Display

When the power switch is turned on, the LCD will blink and then enter the standard mode, as shown below. The number at the left of the LCD at this time shows the model number of the blood pressure monitor. The correlation between model numbers and model names is shown in the table below.

Hyphens display standby mode

LCD with all segments lit
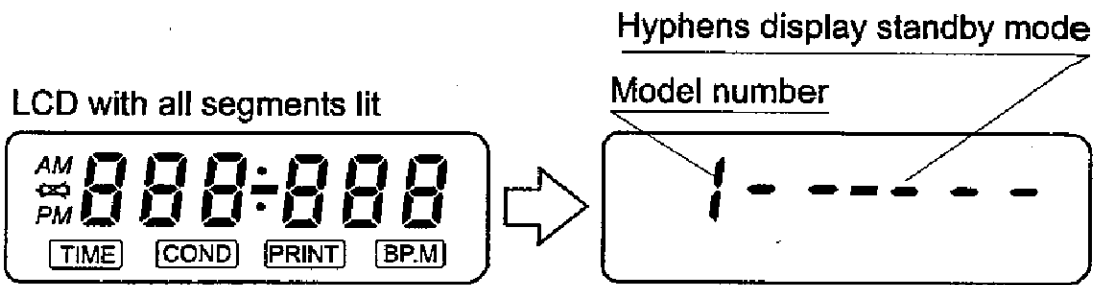
Model number

Correlation between Model Numbers and Model Names

Model number	Model name
1	TM-2430 Series
2	UA PC Series
3	UB PC Series

Explanation of Display Marks

LCD with all segments lit
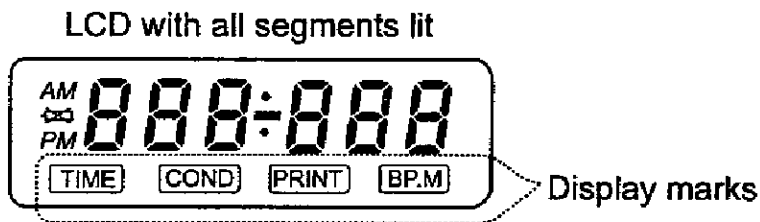
Display marks

Display mark	Explanation
TIME	Displayed when setting the time or ID (applicable to model numbers 1 and 2).
COND	Displayed when setting the measurement interval (applicable to model numbers 1 and 2).
PRINT	Displayed when setting the report format (applicable to model number 1).
PRINT	Blinks during printing.
BP.M	Displayed when measurement data has been uploaded.

Note: Unless this is a back light display, it can not flash.

Low Battery Indicator

When the battery voltage drops during use, the "Lb" is displayed. Replace new batteries or use the AC adapter.

8. Explanation of Key Switches
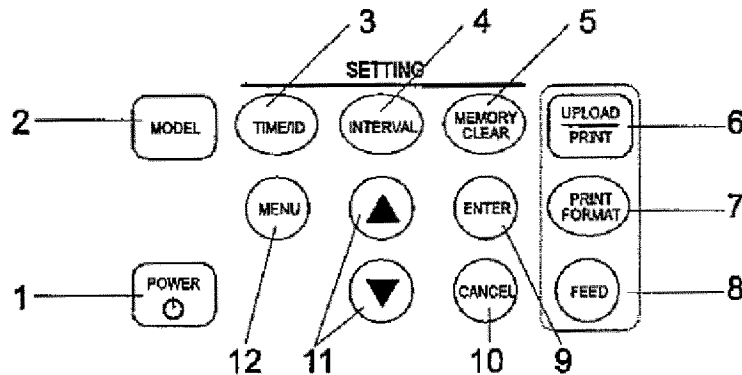
Number	Key	Explanation
1	POWER ⏻	Turns the power on and off.
2	MODEL	Selects the connected blood pressure monitor model.
3	TIME/ID	Enters the mode for setting time and ID.
4	INTERVAL	Enters the mode for setting the measurement interval.
5	MEMORY CLEAR	Clears the measurement data memory of the blood pressure monitor.
6	UPLOAD PRINT	Uploads measurement data from the blood pressure monitor. Printing is then done using the report format in memory.
7	PRINT FORMAT	Used to enter the mode for setting the report format.
8	FEED	Feeds printer paper.
9	ENTER	Inputs setting changes when in a setting mode.
10	CANCEL	Cancels communications, printing, or settings.
11	▲ ▼	Changes setting values when in a setting mode.
12	MENU	Selects the item to be changed when in a setting mode.

Printer Terminal

9. Preparation

Perform the following preparations before using the printer.

9.1. Cable Connection

If you use the infrared communication, it is not necessary to connect the cable.

Step 1   Insert the communication cable into the communication cable connector on the back of the main printer unit, and secure the cable.

Notice
- When connecting the UB PC Series, the cable is different. In this case, use the special communications adapter to connect the cable.
- There are some shapes regarding the accessory cable.
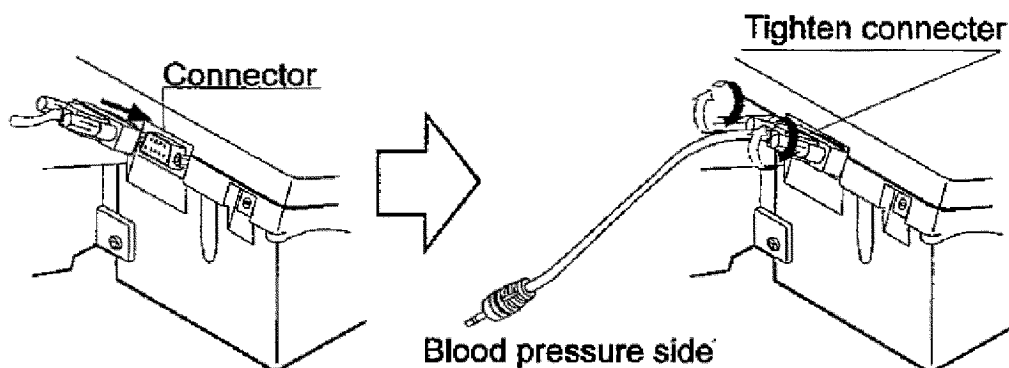
9.2. Power (AC adapter or batteries)

This printer can use batteries or the AC adapter.

Using the AC Adapter

When using the AC adapter, refer to the diagram at right and insert the accessory AC adapter into the AC adapter input jack on the back of the printer. Plug the other end of the adapter into a wall socket.
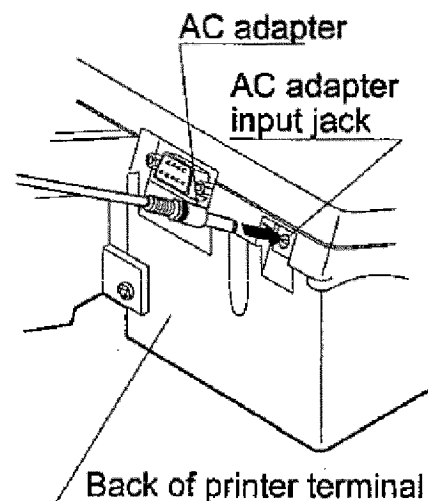
Using Batteries

When using batteries, turn the printer over, refer to the diagram at right, and remove the battery holder from the printer terminal. Follow the arrows in the diagram to put in the batteries.

Bottom of printer terminal   6 batteries
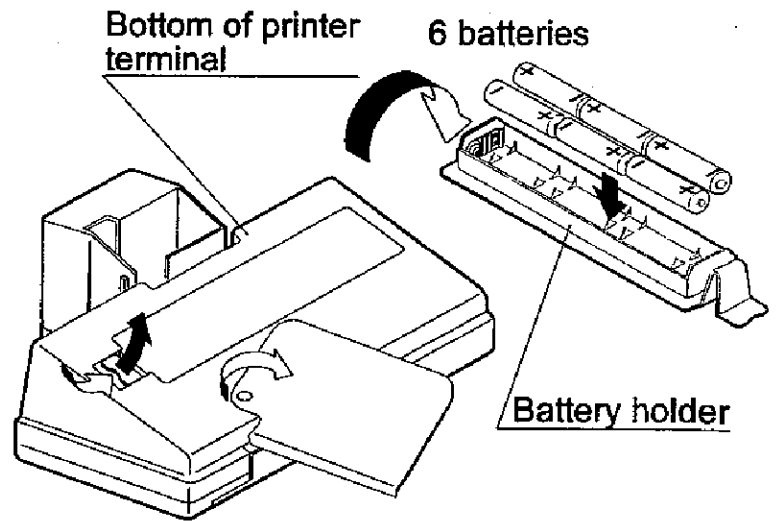
Battery holder

⚠ Caution!

- Put in the batteries properly according to the + and - signs displayed on the holder.
- Replace all batteries when replacement is necessary.
- Do not use different types of batteries together.
- When the printer will not be used for a long time, remove the batteries to avoid damage from leakage.
- When using batteries, the printer terminal is automatically turned off by the auto-power-off function.

9.3. Printer Paper Installation (Replacement)

Notice

- This printer uses thermal paper. Use only the specified printer paper.
- When only 60cm of paper remains, the pink end marker will appear. Replace the paper at this time.

printer terminal

Paper cover

Printer Paper Installation Method

Step 1   Remove the paper cover.

Step 1
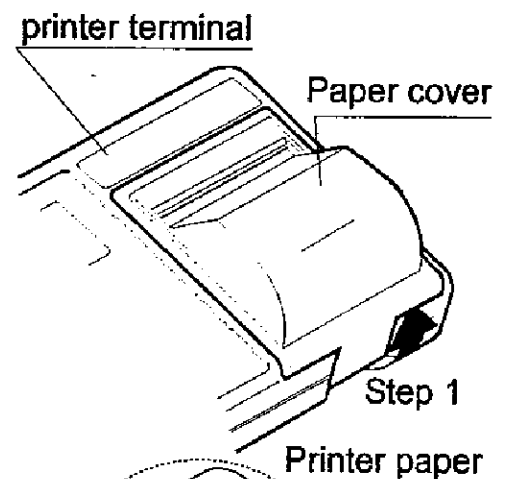
Printer paper

Step 2   Cut the end of the printer paper as shown in the diagram at right.

45°

Step 2
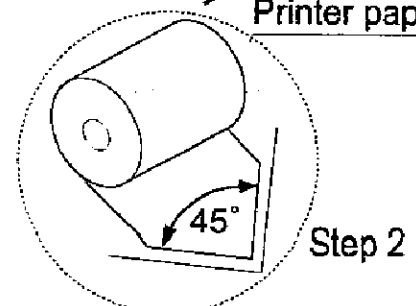
Step 3   Insert the end into the specified position.

Insertion location   Step 3
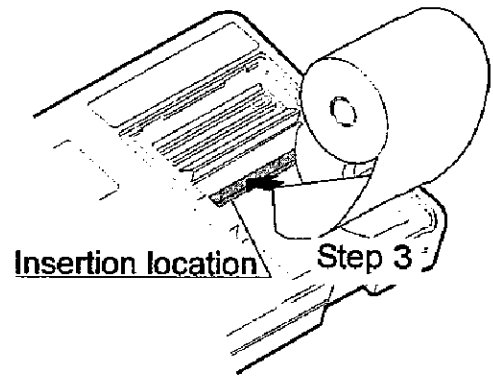
Step 4   When the end comes out of the printer, pull slowly.

Pull   Step 4
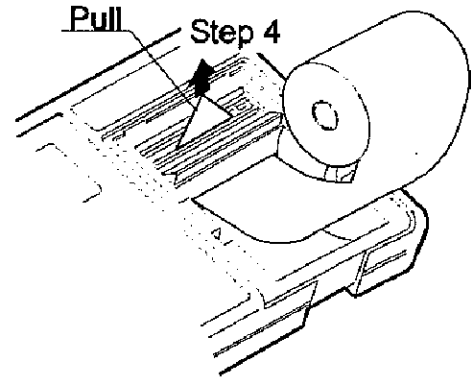
Step 5   When the entire cut portion of the end is visible, press the FEED key and confirm that the paper is fed properly.
If the paper is not fed properly, repeat the process from step 2.

Step 6   If the paper feeds properly, replace the paper cover over the printer paper and secure.

10. The Whole Operation

10.1. The Whole Operation

The overall operation flow is shown here for model 1 (TM-2430 series). Be sure to properly understand this flow when using the units.
Although the flow is the same for other units, refer to the operation and setting sections for a detailed explanation.

Step 1. Connect the cable
Refer to section 9.1 " Cable Connection".

Step 2. Connect the AC adapter. (Or install the batteries.)
Refer to section 9.2 "Power" for details.

Step 3. Install the printer paper
Refer to section 9.3 " Printer Paper Installation" for details.

Step 4. Press the MODEL key and select the model being connected.

Model number	Model name
1	TM-2430 series
2	UA PC series
3	UB PC series

Refer to section 10.1.1 "Model selection" for details.

Step 5. Press the TIME/ID key and set the time.

Step 6. Press the TIME/ID key to set the clock. Since the time and ID can be set at the same time, it is recommended that changes be made to both values simultaneously.
Refer to section 10.2.4 "Time/ID setting" for details.

Step 7. Press the INTERVAL key and set the automatic measurement interval for the blood pressure monitor.
Refer to section 10.2.5 " Measurement Interval Setting " for details.

Cable connection
↓
Power preparations
↓
Printer paper placement
↓
Model selection
↓
ID setting
↓
Time Setting
↓
Measurement interval setting
↓
To next page
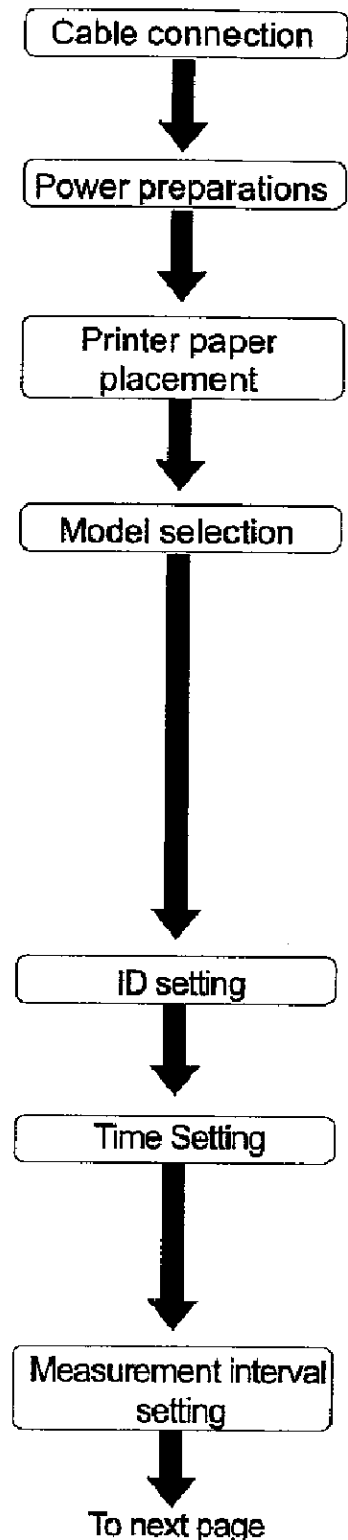
From last page

Step 8. Press the ENTER key. Printing of the blood pressure monitor and printer terminal setting will begin. Refer to section 10.2.7 " Printing of Setting Content " for details.

Setting value confirmation

Step 9. Measure the patient's blood pressure. Refer to the operation manual of the blood pressure monitor for details.

Blood pressure measurement

Step 10. Press the UPLOAD/PRINT key. The data will be uploaded and printing will automatically begin. Printing will be done using the previously set report format.

UPLOAD/PRINT

Step 11. When the uploaded data is to be printed in a different report format, press the PRINT FORMAT key and select the desired format. Refer to section 10.2.3 " Print Format Setting " for details.

Report format change

Step 12. The data recorded in memory should be deleted in preparation for the next blood pressure measurement. Press and hold the MEMORY CLEAR key for 5 seconds or more to clear the data. Refer to section 10.2.6 " Memory Clear " for details.

MEMORY CLEAR

Power OFF
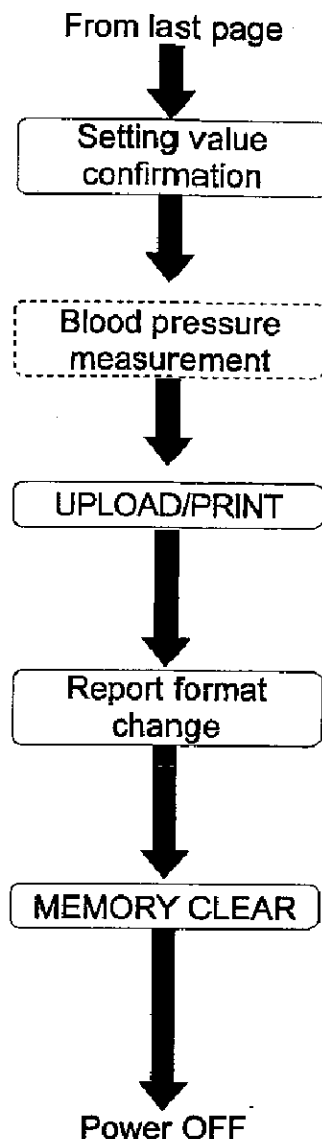
Notice
- Operation or setting that are not required can be skipped.
- When setting do not require changes, data processing is possible using only "Step 10 " and "Step 12 ".

10.1.1. Model Selection

When the overall operation flow is sufficiently understood and printer preparations are complete (items in section 9. "Preparation" are complete), first select the blood pressure monitor model to be connected.

Step 1. Press the POWER key. When the power is turned on the unit will enter the standby mode.

Step 2. Press the MODEL key and select the model of the connected blood pressure monitor. The relationship between model numbers and blood pressure monitor model names is shown below.

Model Number `/-- --- - -`

Model number	Model name	Reference section
1	TM-2430 series	10.2 Model 1 operation and setting content
2	UA PC series	10.3 Model 2 operation and setting content
3	UB PC series	10.4 Model 3 operation

Subsequent operation

Once the model number of the connected blood pressure monitor is selected, the following operation will be executed. However, there are some differences depending on the model. Use the reference sections listed in the above table as necessary.

Step 3. Connect the blood pressure monitor to the printer (except when using infrared communications) to prepare for communication between the units.

Step 4. Upload measurement data, set the various setting, and select the report format.

Step 5. When each operation is complete, the unit will return to the standby mode. The operation in step 4 may be repeated at this point if necessary.

Step 6. When operation is complete, press the POWER key to turn the power off.

An outline of the overall operation flow is shown in the flowchart below.

POWER ⏻ — Power on.

`I - - - - - -` — Standby mode.
Model connected when the power
was previously turned off will be shown.

MODEL — Model Selection

`MODEL 1`   `MODEL 2`   `MODEL 3`

MODEL 1:

`I - - - - I` IrDA compatible
or
`I - - - - -` RS-232C compatible

MODEL 2: `2 - - - - -` Display of MODEL 2

MODEL 3: `3 - - - - -` Display of MODEL 3

UPLOAD/PRINT   TIME/ID   PRINT FORMAT
INTERVAL / MEMORY CLEAR

UPLOAD/PRINT   TIME/ID

UPLOAD/PRINT

UPLOAD PRINT | **Various setting** | **Report format setting**

UPLOAD PRINT | **Clock setting**

UPLOAD PRINT

`I - - - - - -` — Standby mode.
Last model will be shown.

POWER ⏻ — Power off

The `[_ _ _]` means operation status

10.2. Model 1, Operation and Setting

When model 1 is selected (10.1.1 "Model selection"), operation is outlined in the following flowchart.

Model name: TM-2430 series

POWER ⏻ — Turning on

|------| — Standby mode.
Model connected when the power was previously turned off will be shown.

MODEL — Model Selection

In the Model 1 — Refer to 10.1 "Overall operation flow"

Communication preparations — Refer to 10.2.1 "Communication preparations"

|------| IrDA compatible
or
|------| RS-232C compatible

Communication method selection
Refer to 10.2.1 "Communication preparations"

▲ ▼

UPLOAD PRINT

PRINT FORMAT — MENU — ▲ ▼ — ENTER

TIME/ID — MENU — ▲ ▼ — ENTER

INTERVAL — MENU — ▲ ▼ — ENTER

MEMORY CLEAR

UPLOAD PRINT

Report format selection

TIME/ID setting

INTERVAL setting

MEMORY CLEAR

Refer to 10.2.2 "Data upload and printing"

Refer to 10.2.3 "Print format setting"

Refer to 10.2.4 "Time / ID setting"

Refer to 10.2.5 "Measurement interval setting"

Refer to 10.2.6 "Memory clear"

In the Model 1

The [____] means operation status.

The various relevant setting used when model 1 is selected are shown below. With model 1, all of the printer terminal (TM-2480/2481) functions can be used. For a detailed description of the setting, refer to the reference section listed in the table below. In addition, with model 1 infrared (TM-2481) can be selected as the communication method. Refer to section 10.2.1 "Communication preparations" for details regarding these selections.

Function name	Content	Reference section
UPLOAD/PRINT	Used to upload and print measurement data	10.2.2 "Data upload and printing"
PRINT FORMAT setting	Sets the report format for the measurement data	10.2.3 "Print format setting"
TIME/ID setting	Sets the time and ID number. Display of the blood pressure monitor measurement result can also be turned on or off.	10.2.4 "Time / ID setting"
INTERVAL setting	Sets the interval for automatic measurement by the blood pressure monitor.	10.2.5 "Measurement interval setting"
MEMORY CLEAR	Clears the measurement data in the memory of the blood pressure monitor.	10.2.6 "Memory clear"

10.2.1. Communication Preparations

With model 1, cable communication or infrared communication (TM-2481 only) can be selected. A brief description of these communication methods is provided below.

Cable Communication (RS232C communication)

Step 1. Connect the accessory communication cable to the connector on the back of the printer terminal (refer to section 9. "Preparation").

Step 2. Press the ▲ ▼ keys to select the communication method.
When the far right digit on the LCD display is a hyphen (-), cable communication is selected.

Communication method

| - --- - - |
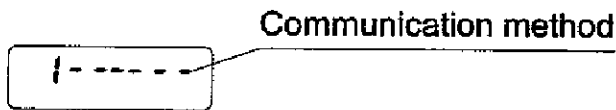
Step 3. Connect the mini-pin jack end of the accessory communication cable to the blood pressure monitor (TM-2430 series).
The blood pressure monitor (TM-2430 series) display will change to | - - - - |

Step 4. When the display changes, preparations for cable communication are complete.
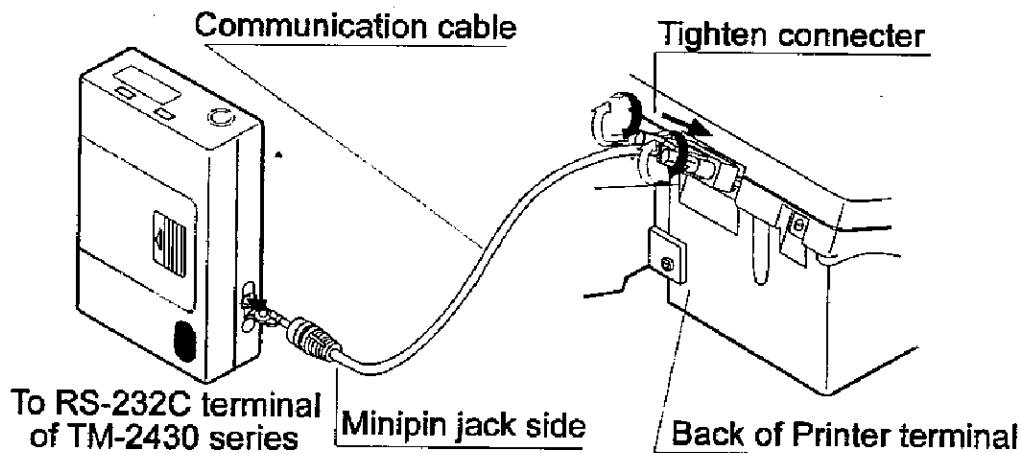
Communication cable   Tighten connecter

To RS-232C terminal
of TM-2430 series |Minipin jack side   / Back of Printer terminal

⚠ Caution!

When the unit is left with the communication cable inserted in the blood pressure monitor, the batteries will rapidly deteriorate. Therefore, when communications are complete, unplug the cable.
When the cable is unplugged the blood pressure monitor will return to the clock display.

Infrared Communications (IrDA communication) – TM-2481 only

Notice

Infrared communications are limited to use with blood pressure monitors having the infrared communication function (TM-2431).

Step 1. **Switch the printer terminal to infrared communications mode.**
Press the [▲][▼] keys to select the communication method.
When the far right digit on the LCD display is a 1, infrared communication is selected.

Communication method

$$\boxed{I \text{ - - - - } I}$$
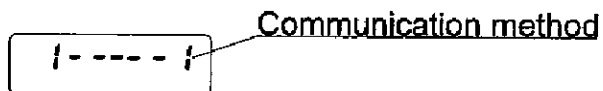
Step 2. Insert the blood pressure monitor (TM-2431) into the back panel pocket of the TM-2481.

Step 3. **Changing the blood pressure monitor (TM-2431) to infrared communication mode**
Press the AUTO ON/OFF switch on the blood pressure monitor (TM-2431).
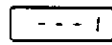
Step 4. If the switch is held down the blood pressure monitor display will soon read $\boxed{\text{ - - - 1}}$.
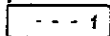
Step 5. When the display changes, preparations for infrared communications are complete.

TM-2431

Infrared communication section

Printer terminal

Back panel pocket

⚠ **Caution!**

When the blood pressure monitor is left in the infrared communications mode ($\boxed{\text{ - - - I}}$ display), the batteries will rapidly deteriorate. Therefore, when communications are complete, press the AUTO ON/OFF switch to exit the infrared communication mode.
When the infrared communications mode is exited the blood pressure monitor will return to the clock display.
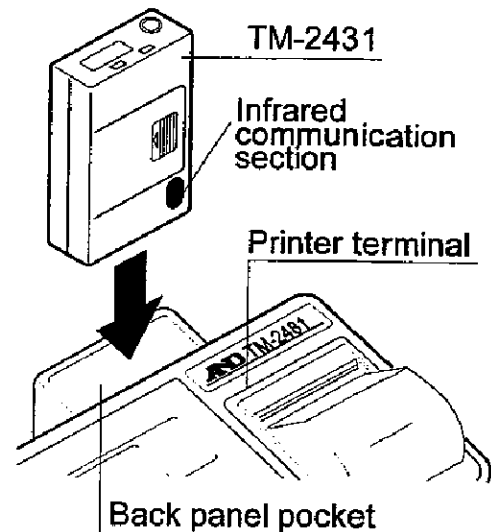
10.2.2. Data Upload and Printing

Explanation

With model 1, the print format can be selected. The various print formats are described in the table below.

Print format	Content
1	Prints a table + blood pressure graph + pulse graph + pressure load graph (refer to section 13. Appendix (TM-2430 series printout example)).
2	Prints a table + blood pressure graph + pulse graph.
3	Prints a table + pressure load graph.
4	Prints a table only.
5	Prints the blood pressure graph only.
6	Prints the pulse graph only.
7	Prints the pressure load graph only.

- The method for setting the report format, including the print formats for model 1, is described in section 10.2.3 "Print format setting."

- When the UPLOAD/PRINT key is pressed, measurement data from the blood pressure monitor is uploaded. The measurement results are then printed according to the selected report format.
- The report format is saved even when the power is turned off.

- When measurement data is uploaded, the BPM indicator is displayed. While this mark is displayed the printer will maintain the measurement data in memory. If the report format is changed while the measurement data is recorded in memory, printing will begin using the new report format.
- Uploaded measurement data will be deleted when the connected model is changed or the power is turned off.

Setting Procedure

Step 1. Confirm that communication preparations are complete (refer to section 10.2.1 "Communication preparations").

Step 2. Press the UPLOAD/PRINT key.
Measurement data will be uploaded from the blood pressure monitor.

After measurement datauploading is complete

Step 3. The [BP.M] indicator is displayed when uploading is complete.

Printing begins

Step 4. Printing will begin. The [PRINT] mark will blink during printing.

Display after printing is complete.

Step 5. The [PRINT] indicator will go out when printing is complete.

1 0.2.3. Print Format Setting

Item number   Setting value
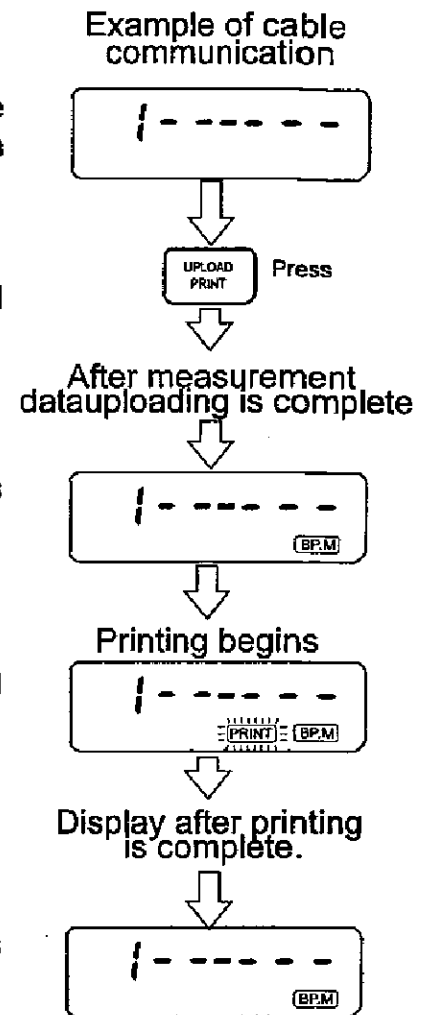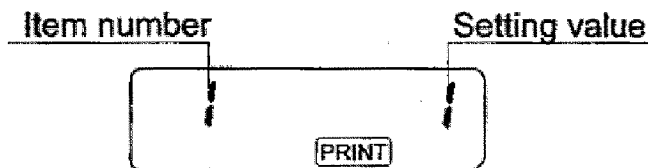
Explanation

- The report format setting is used to input various parameters into the printer terminal. This setting does not change the measurement data, time, or other setting of the blood pressure monitor.
- The above display appears when the PRINT FORMAT key is pressed.
- The [PRINT] indicator displayed during report format setting.
- When measurement data is in memory ([BP.M] indicator is displayed), printing in the new format will begin after changes are made.
- The report format is saved in memory even when the power is turned off.
- An explanation of item numbers and setting values is provided in the table below.

Item number	Setting value range	Setting content
1	1 ~ 7	Print format 1 Table + blood pressure graph + pulse graph + pressure load graph 2 Table + blood pressure graph + pulse graph 3 Table + pressure load graph 4 Table 5 Blood pressure graph 6 Pulse graph 7 Pressure load graph
2	AU, 0 ~ 23	Processing start time AU Time of first measurement data (automatic) 0 ~ 23 Set time
3	0 ~ 23	Sleep time
4	0 ~ 23	Awake time
5	100 ~ 180	Systolic threshold value while awake (set in 5mmHg steps)
6	50 ~ 130	Diastolic threshold value while awake (set in 5mmHg steps)
7	100 ~ 180	Systolic threshold value while a sleep (set in 5mmHg steps)
8	50 ~ 130	Diastolic threshold value while a sleep (set in 5mmHg steps)
9	—	Initial setting Print format: 1 Processing start time: AU Sleep time: 22 (10:00pm) Awake time: 7 (7:00am) Systolic threshold value while awake: 140mmHg Diastolic threshold value while awake: 90mmHg Systolic threshold value while a sleep: 140mmHg Diastolic threshold value while a sleep: 90mmHg

Setting Procedure

Step 1. When communication preparations are complete (refer to section 10.2.1 "Communication preparations"), press the PRINT FORMAT key.

Step 2. The [PRINT] indicator is displayed and item number 1 will be displayed along with the current setting value.

Step 3. To change the setting value, press the ▲ ▼ keys.
In this example the setting value in item number 1 (print format) will be changed to 3 (table + pressure load graph).

Step 4. When changing the item number, press the MENU key. When changing the setting value, press the ▲ ▼ keys.
In this example the setting value of item number 2 (processing start time) will be changed to 3 (3:00AM).

Step 5. When changes are necessary, repeat the same basic operations to change the setting values for each item number.

Step 6. When changes are complete press the ENTER key to confirm the new values.
When measurement data is contained in memory ([BP.M] indicator displayed), printing will begin using the new setting.
When measurement data is not contained in memory, "PLEASE UPLOAD DATA" will be printed and the report format will be set.

Step 7. If the CANCEL key is pressed without pressing the ENTER key, report format setting will be canceled and the report format will not be changed.

Example using cable communications

Item number   Setting value

Press

Change setting value using arrow keys

Change setting value of item number 1 to 3

Change item number using MENU key

Change setting value using arrow keys

Change setting value of item number 2 to 3.

Change setting values of each item using same basic operations

Press ENTER key to register new settings

Printing measurement data.
or
Printing "PLEASE UPLOAD DATA"

Display after printing is complete

10.2.4. Time/ID Setting

Item number   Setting value

```
┌─────────────────────┐
│  1            0      │
│  TIME               │
└─────────────────────┘
```

Explanation

- The time/ID setting sets the various parameters in the blood pressure monitor (TM-2430 series).
- The display shown above appears when the TIME/ID key is pressed.
- The TIME indicator is displayed during time/ID setting operation.
- An explanation of item numbers and setting values is shown in the table below.

Item number	Setting value range	Setting content
1	0,1	Display function on/off 0: Off , 1: On
2	1 ~ 99	ID number
5	1997 ~ 2096	Year (4 digits)
6	1 ~ 12	Month
7	1 ~ 31	Day (setting range is automatically adjusted according to the year and month)
8.	0 ~ 23	Hour (use 24-hour time)
9	00 ~ 59	Minutes (2 digits are always displayed)

Use the display function on/off item only after reading the operation manual of the blood pressure monitor.

Setting Procedure

Step 1. When communication preparations are complete (refer to section 10.2.1 "Communication preparations"), press the TIME/ID key.

Step 2. The TIME indicator and item number 1 will be displayed along with the setting value for the connected blood pressure monitor.

Step 3. To change the setting value, press the ▲ ▼ keys.
In this example the setting value in item number 1 (display function on/off) will be changed to 1 (on).

Step 4. When changing the item number, press the MENU key. When changing the setting value, press the ▲ ▼ keys.
In this example the setting value of item number 2 (ID number) will be changed to 90.

Step 5. When other changes are necessary, select each item number and repeat the same basic operations to change the setting values for year, month, day, hour, and minute.

Step 6. When changes are complete press the ENTER key to confirm the new values.
The new setting for the blood pressure monitor will be printed. Please check the content of the setting.

Step 7. If the CANCEL key is pressed without pressing the ENTER key, time/ID setting operation will be canceled and the setting of the blood pressure monitor will not be changed.

Example using cable communications

Item number   Setting value

Press
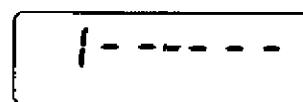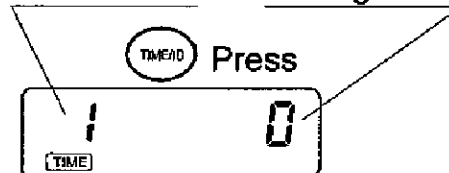
Change setting value using arrow keys

Change setting value of item number 1 to 1

Change item number using MENU key
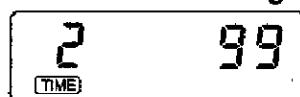
Change setting value using arrow keys

Change setting value of item number 2 to 90

Set these parameters of year, month, day, hour, and minute using same basic operations

Press ENTER key to register new settings

Setting content will be printed

Display after printing is complete

10.2.5. Measurement Interval Setting

Item number

```
┌─────────────────────┐
│            ┃        │
│            ┃        │
│      [COND]         │
└─────────────────────┘
```
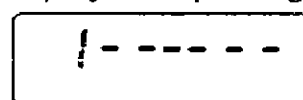
Explanation

- The measurement interval setting sets the measurement interval to be used for automatic measurement by the blood pressure monitor (TM-2430 series).
- The above display appears when the INTERVAL key is pressed.
- The [COND] indicator is displayed during measurement interval setting.
- An explanation of the item numbers is provided in the table below.

Item number	Setting content
1	Automatic measurement mode I 07:00 ~ 21:59: 15-minute intervals 22:00 ~ 6:59: 30-minute intervals
2	Automatic measurement mode II 15-minute intervals when S is not displayed 30-minute intervals when S is displayed
3	Automatic measurement mode III Maximum of 6 blocks can be set Enter other setting routine

For details regarding the measurement interval refer to the operation manual of the blood pressure monitor (TM-2430 series).

Setting Procedure

```
| - -- - - -
```

Item number

Step 1. When communication preparations are complete (refer to section 10.2.1 "Communication preparations"), press the INTERVAL key.

(INTERVAL) Press

```
    /
   |
 [COND]
```

Step 2. The [COND] indicator is displayed and the item number set in the connected blood pressure monitor will be displayed.

(MENU) Change item number using MENU key

Step 3. To change the item number, press the MENU key.
In this example the item number 1 (automatic measurement mode I) will be changed to 2 (automatic measurement mode II).

```
   2
 [COND]
```
Change item number 1 to 2

Step 4. When changes are complete press, the ENTER key to confirm the new value.
(When item number 3 is selected, setting operation will continue. Refer to the next section for automatic measurement mode III setting.)
The new setting for the blood pressure monitor will be printed. Please check the content of the setting.

(ENTER) Press ENTER key to register new settings

| Setting content will be printed |

Step 5. If the CANCEL key is pressed without pressing the ENTER key, the measurement interval setting operation will be canceled and the setting of the blood pressure monitor will not be changed.

Display after printing is complete

```
| - -- - -
```
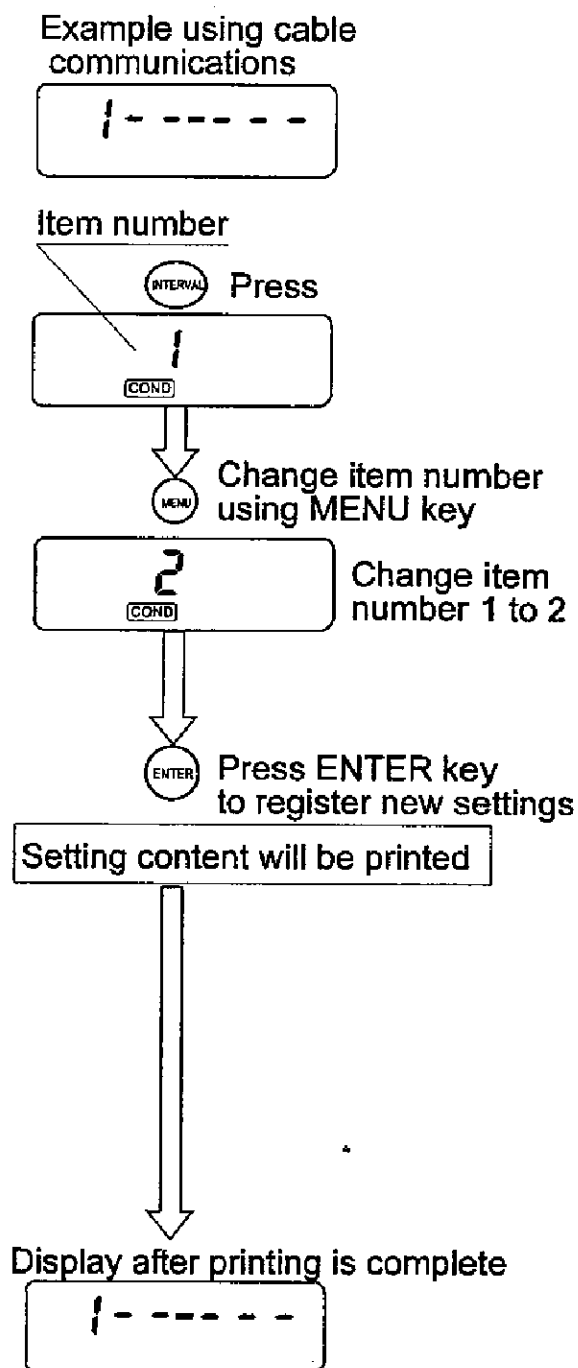
10.2.5.1. Setting of Automatic Measurement Mode III

This is automatic measurement mode III (item number 3) setting.

Item number Setting value

```
 ┌──────────────────┐
 │   0 1      0     │
 │  [COND]          │
 └──────────────────┘
```
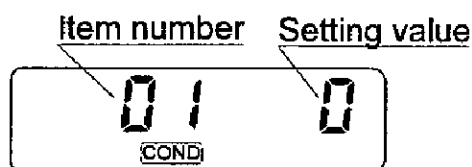
Explanation

- When automatic measurement mode III is selected as the measurement interval, the 24-hour time period in a day can be divided into up to 6 blocks and the measurement interval can be set for each block.
- The [COND] indicator will continue to be displayed and the above display will appear.
- An explanation of each item number is provided in the table below.

Item number	Setting range	Setting content
01	0 ~ 23	Block 1 start time
02	(Note 1)	Measurement interval
03	0 ~ 23	Block 1 end time (block 2 start time).
04	(Note 1)	Measurement interval
05	0 ~ 23	Block 2 end time (block 3 start time). However, a value within the previous block time cannot be set.
06	(Note 1)	Measurement interval
07	0 ~ 23	Block 3 end time (block 4 start time). However, a value within the previous block time cannot be set.
08	(Note 1)	Measurement interval
09	0 ~ 23	Block 4 end time (block 5 start time). However, a value within the previous block time cannot be set.
10	(Note 1)	Measurement interval
11	0 ~ 23	Block 5 end time (block 6 start time). However, a value within the previous block time cannot be set.
12	(Note 1)	Measurement interval
13	Block 1 start time	Block 6 end time However, the block 1 start time must be input.

Note 1: The selective range is OFF, 5, 10, 15, 20, 30, 60, and 120 in units of minute.

Setting Procedure

Step 1. Enter the mode 1 using the MODEL key form the standby mode. (Refer to section 10.2.1).

```
| - --- - -
```

Step 2. Select item 3 as the measurement interval and press the ENTER key. Setting for automatic measurement mode III will then be possible. The setting method for block 1 start time, measurement interval, and end time will be used as an example for this explanation. The setting method for subsequent blocks is the same.

(INTERVAL) **Press**

```
|
[COND]
```

Change item number using MENU key (MENU)

```
3
[COND]
```

Item number

Setting value

(ENTER) **Press**

Step 3. Item number 01 (block 1 start time) will be displayed. When changing the start time setting value, press the ▲ ▼ keys. In this example the setting value of item number 01 (block 1 start time) is changed to 1 (start time of 1:00AM).

```
01      0
[COND]
```

(▲)(▼) Change setting value

```
01      1
[COND]
```
Change start time to 1 (1:00am)

Step 4. Press the MENU key to display item number 02 (block 1 measurement interval). When changing the measurement interval setting value, press the ▲ ▼ keys. In this example the setting value of item number 02 (block 1 measurement interval) is changed to 30 (30 minutes).

Block 1

Change item number using MENU key (MENU)

```
02 OFF
[COND]
```

(▲)(▼) Change setting value

```
02     30
[COND]
```
Change measurement interval to 30 minutes

Step 5. Press the MENU key to display item number 03 (block 1 end time). When changing the end time setting, press the ▲ ▼ keys. The block 1 end time automatically becomes the block 2 start time. In this example the setting value of item number 03 (block 1 end time) is changed to 22 (10:00PM).

Change item number using MENU key (MENU)

```
03      0
[COND]
```

(▲)(▼) Change setting value

```
03     22
[COND]
```
Change end time to 22 (10:00pm)

Block 2

To next page
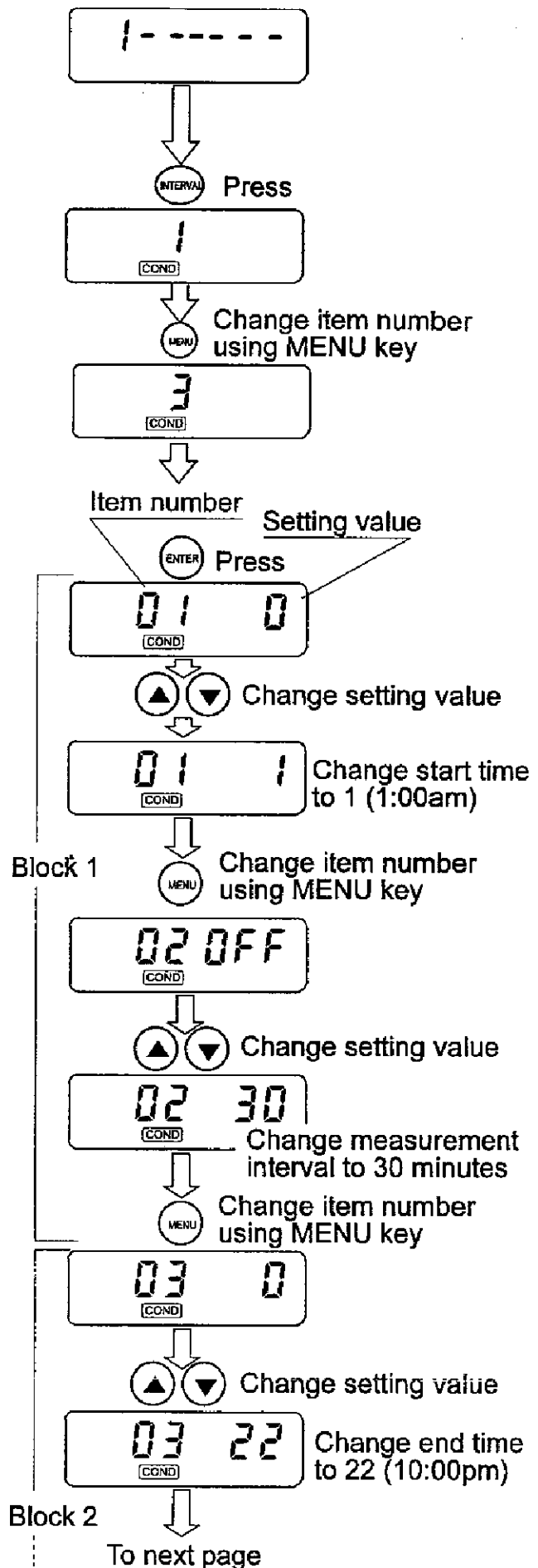
Step 6. When setting for block 2 and subsequent blocks are necessary, use the same procedure to select item numbers and change setting values. However, be sure to carefully read and understand the setting cautions described in the next section.

Step 7. When changes are complete, press the ENTER key to register the new values and exit the setting mode.
The new setting for the blood pressure monitor will be printed. Please check the content of these setting.

Step 8. If the CANCEL key is pressed without pressing the ENTER key, the measurement interval setting operation will be canceled and the setting of the blood pressure monitor will not be changed.

From last page

⇩

Set subsequent blocks using same basic operations

(ENTER) Press ENTER key to register settings

Setting content is printed

Display after printing is complete

```
! - -- - -
```
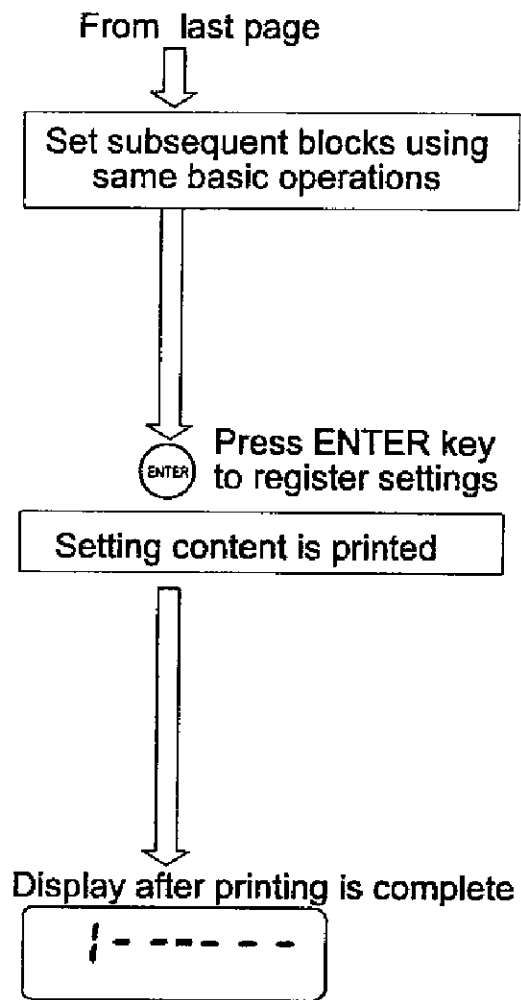
Setting Cautions

● **The time range set in a previous block cannot be set in the next block.**

Example

Block 1: 1 ~ 5 (1:00AM ~ 5:00AM)
Block 2: 5 ~ 14 (5:00PM ~ 2:00PM)

In this case the setting value for block 3 end time (item number 07) must be within the 14 ~ 23, 0 ~ 1 range.

Possible setting range for block 3
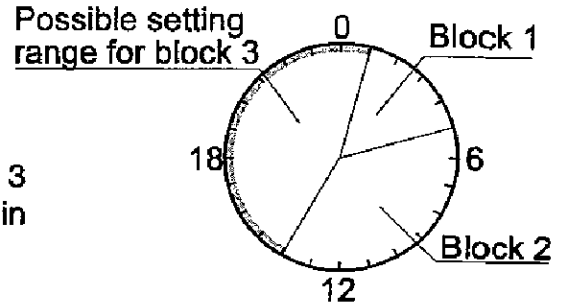
Item number	Setting range	Setting content
01	1	Block 1 start time
02	—	Measurement interval
03	5	Block 1 end time (block 2 start time)
04	—	Measurement interval
05	14	Block 2 end time (block 3 start time)
06	—	Measurement interval
07	14 ~ 23 0 ~ 1	Block 3 end time (block 4 start time). However, the time range used in previous blocks cannot be set.

● **Even when a total of 6 blocks are not used, further block setting is not possible once a total of 24 hours has been used by all currently set blocks.**

Example

Block 1: 1 ~ 5 (1:00AM ~ 5:00AM)
Block 2: 5 ~ 14 (5:00AM ~ 2:00PM)
Block 3: 14 ~ 1 (2:00PM ~ 1:00AM)

In this case the block 4 measurement interval setting (item number 08) will not appear when the menu key is pressed. Instead, item number 01 will appear.

Since there is no remaining time, block 4 cannot be set.
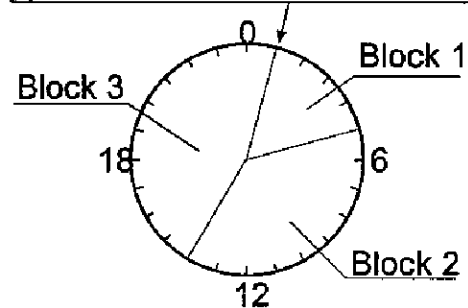
- **When 120 minutes is selected as the measurement interval, the display will require an end time using 2-hour intervals.**

  Example
      Block 1 start time: 1 (1:00AM)
      Block 1 measurement interval: 120 minutes

  In this case the setting values displayed for block 1 end time (item number 03) will be 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, and 23.

- **The 120 minute measurement interval will not be displayed for final blocks containing only 1 hour of time.**

  A final block is defined as the next block when the total time set for previous blocks is 23 hours.

  Example
      Block 1 start time: 0 (12:00AM)
      Block 1 measurement interval (60 minutes)
      Block 1 end time 23 (11:00PM)

  In this case, a setting value of 120 cannot be input for the measurement interval of block 2 (item number 04).

1 hour remains
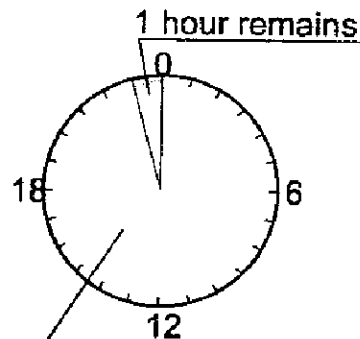
Block 1
The situation is the same when multiple blocks use this period of time.

10.2.6.   Memory Clear

Explanation

The MEMORY CLEAR key is used to delete the measurement data in the blood pressure monitor (TM-2430 series).

Setting Procedure

Step 1.   When communication preparations are complete   (refer to section 10.2.1 "Communication preparations"), press and hold the MEMORY CLEAR key. The buzzer will beep every second and, after 5 seconds, a long buzzer sound will be heard.

After measurement data has been cleared, the message "MEMORY CLEARED" will be printed.
When measurement data has not been cleared, the message "MEMORY CLEAR FAILED" will be printed.

Step 2.   When the MEMORY CLEAR key is not pressed and held for 5 seconds the measurement data will not be deleted.
In this case no message will be printed

Example using cable communication

⚠ **Caution!**

Be careful when using these operations since measurement data cleared from the blood pressure monitor cannot be recovered. Be sure to execute measurement data processing before clearing the memory.
When attaching the blood pressure monitor to a new person, be sure to clear the measurement data.
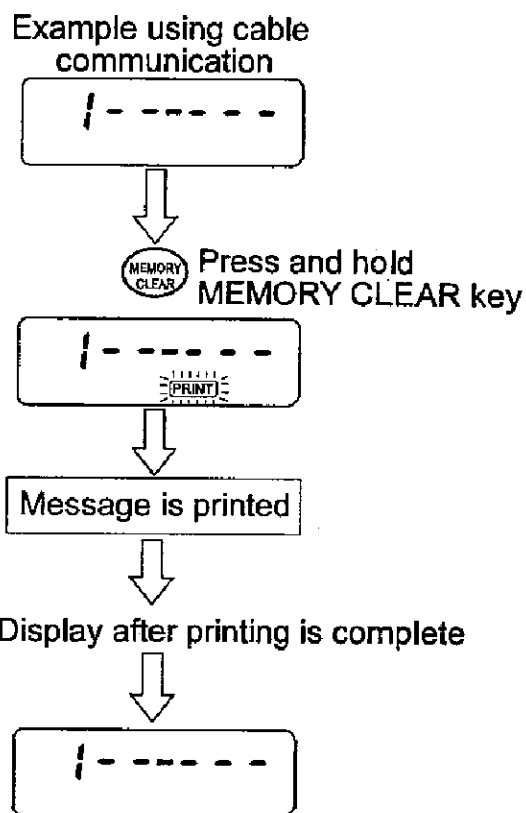
10.2.7. Printing of Setting Content

Explanation
- The time, measurement interval, ID, and other items set in the blood pressure monitor (TM-2430 series) will be printed.
- The report format set in the printer terminal (TM-2480) will also be printed.

Setting Procedure
Step 1. When communication preparations are complete (refer to section 10.2.1 "Communication preparations"), press the ENTER key. Printing will begin.

Notice

When no blood pressure monitor is connected, only the report format will be printed.

Example using cable communication
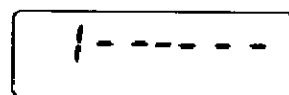
(ENTER) Press
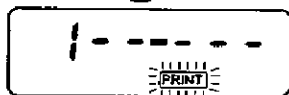
Time, measurement interval, ID, and other items are printed Report format is printed

Display after printing is complete.
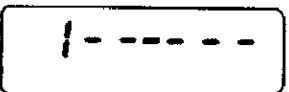
10.3. Model 2, Operation and Setting

When model 2 is selected in the overall operation flow (10.1.1 Model selection) shown in section 10.1, the subsequent operations are outlined in the following flowchart.

Model name: UA PC series

POWER ⏻	Turning on
⌐ - - - - -	Standby mode. Model connected when the power was previously turned off will be shown.
MODEL	Model Selection
In the Model 2	Refer to 10.1 "Overall operation flow"
Communication preparations	Refer to 10.3.1 "Communication preparations"
2 - - - - -	Refer to 10.3.1 "Communication preparations"

UPLOAD / PRINT → UPLOAD PRINT — Refer to 10.3.2 "Data upload and printing"

TIME/ID, MENU, ▲ ▼, ENTER → TIME/ID setting — Refer to 10.3.3 "Time setting"

INTERVAL, MENU, ▲ ▼, ENTER → Alarm setting — Refer to 10.3.4 " Alarm setting for Measurement time"

MEMORY CLEAR → MEMORY CLEAR — Refer to 10.3.5 "Memory clear"

In the Model 2

The ⌐ means operation status.

When model 2 is selected the functions that can be used with the printer terminal (TM-2480) are limited. The functions and various setting that can be used are shown in the table below. For a detailed description of the setting, refer to the reference section listed in the table below.

Function name	Content	Reference section
UPLOAD/PRINT	Used to upload and print measurement data	10.3.2 "Data Upload and Printing"
Time Setting	Sets the time	10.3.3 "Time Setting"
Alarm Setting	Sets the alarm for measurement of the blood pressure monitor	10.3.4 " Alarm Setting for Measurement Time"
Memory Clear	Clears the measurement data in the blood pressure monitor	10.3.5 "Memory Clear"

10.3.1. Communication Preparations

Step 1. Connect the accessory communication cable to the connector on the back of the printer terminal (refer to section 9. "Preparation").

Step 2. When the blood pressure monitor displays clock, connect the mini-pin jack of the accessory communication cable to the blood pressure monitor.
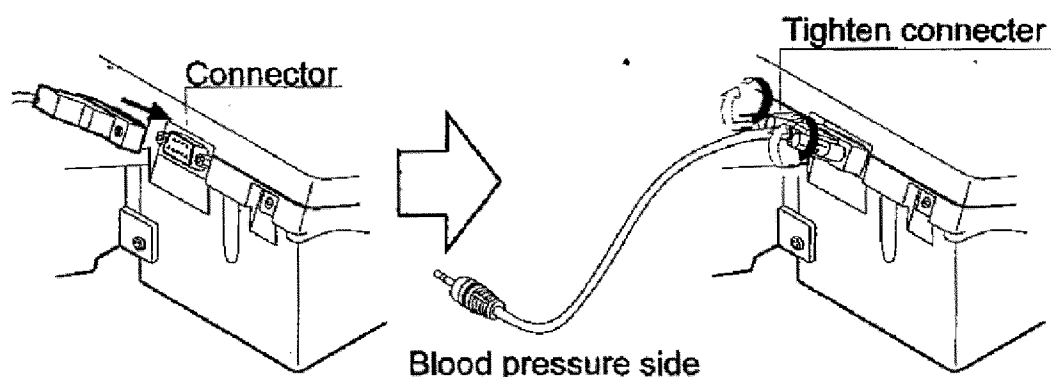
Connector

Tighten connecter

Blood pressure side

⚠ **Caution!**
When the unit is left with the communication cable inserted in the blood pressure monitor, the batteries will rapidly deteriorate. Therefore, when communications are complete, remove the cable. When the cable is removed, the blood pressure monitor will return to the clock display.
About several products, this connection procedure is different. Refer to the instruction manual of product you use

10.3.2. Data Upload and Printing

Explanation

- When the UPLOAD PRINT key is pressed, measurement data is uploaded from the blood pressure monitor. Measurement results are then printed using the standard report format.
  With model 2, the report format cannot be selected.

- When measurement data is uploaded, the [BP.M] indicator is displayed. Measurement data uploading is complete when this indicator is displayed. The communication cable can be unplugged from the blood pressure monitor at this time.

Setting Procedure

Step 1. Confirm that communication preparations are complete (refer to section 10.3.1 "Communication preparations").

Step 2. Press the UPLOAD/PRINT key. Measurement data will be uploaded from the blood pressure monitor.

Step 3. The [BP.M] indicator is displayed when uploading is complete.

Step 4. Printing will begin. The [PRINT] indicator will blink during printing.

Step 5. The [PRINT] indicator will go out when printing is complete.

Press

After measurement data uploading is complete

Printing begins

Display after printing is complete
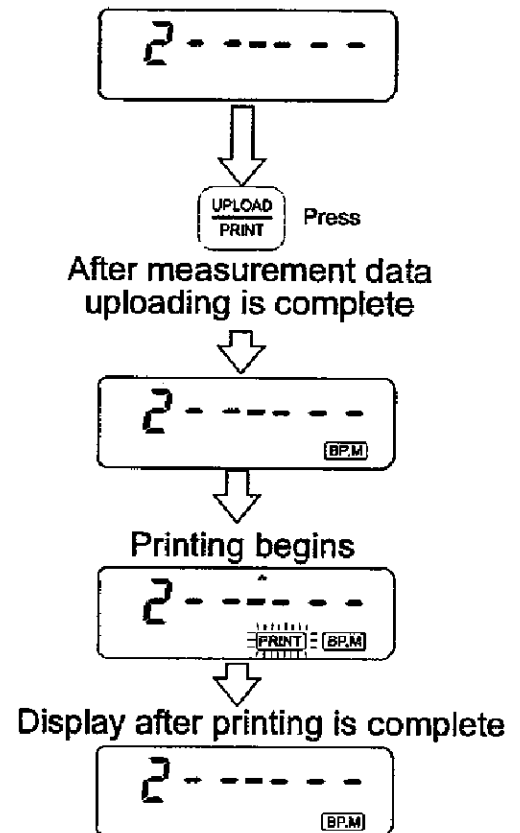
10.3.3.   Time Setting

Item number   Setting value
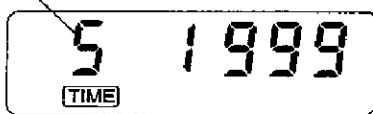
Explanation
- This setting sets the time in the blood pressure monitor (UA PC series).
- The display shown above appears when the TIME/ID key is pressed.
- The TIME indicator is displayed during time setting operation.
- An explanation of item numbers and setting values is shown in the table below.

| Item number	Setting value range	Setting content
5	1997 ~ 2096	Year (4 digits)
6	1 ~ 12	Month
7	1 ~ 31	Day (setting range is automatically adjusted according to the year and month)
8	0 ~ 23	Hour (use 24-hour time)
9	00 ~ 59	Minutes (2 digits are always displayed)

Setting Procedure

Step 1. When communication preparations are complete (refer to section 10.3.1 "Communication preparations"), press the TIME/ID key.

```
⌐┐- --- -- -
```

Item number   Setting value

(TIME/ID) / Press

Step 2. The ⌐TIME⌐ indicator and item number 5 will be displayed along with the setting value for the connected blood pressure monitor.

```
5   1998
(TIME)
```

Step 3. To change the setting value, press the ▲ ▼ keys.
In this example, the setting value in item number 5 (year) will be changed to 1999.

Change setting value using arrow keys

(▲)(▼)

```
5   1999
(TIME)
```
Change setting value of item number 5 to 1999

Step 4. When changing the item number, press the MENU key. When changing the setting value, press the ▲ ▼ keys.
In this example, the setting value of item number 6 (month) will be changed to 4 (April).

Change item number using MENU key

(MENU)

```
6        1
(TIME)
```

Change item number using MENU key

(▲)(▼)

```
6        4
(TIME)
```
Change setting value of item number 6 to 4

Step 5. When other changes (day, hour, minute) are necessary, select each item number and repeat the same basic procedure to change the setting.

Change setting values of each subsequent item (day, hour, and minute) using same basic operations

Step 6. When changes are complete press the ENTER key to confirm the new values.
The new setting for the blood pressure monitor will be printed. Please check the content of the setting.

(ENTER) Press ENTER key to register new settings

Setting content will be printed

Step 7. If the CANCEL key is pressed without pressing the ENTER key, the time setting operation will be canceled and the setting of the blood pressure monitor will not be changed.

Display after printing is complete

```
⌐┐- --- -- -
```

10.3.4. Alarm Setting for Measurement Time

Item number   Setting value

```
 ┌──────────────────┐
 │    ┌┐ ┌     ┌┐    │
 │    ││ │     ││    │
 │    └┘ │     └┘    │
 │   ─COND─          │
 └──────────────────┘
```
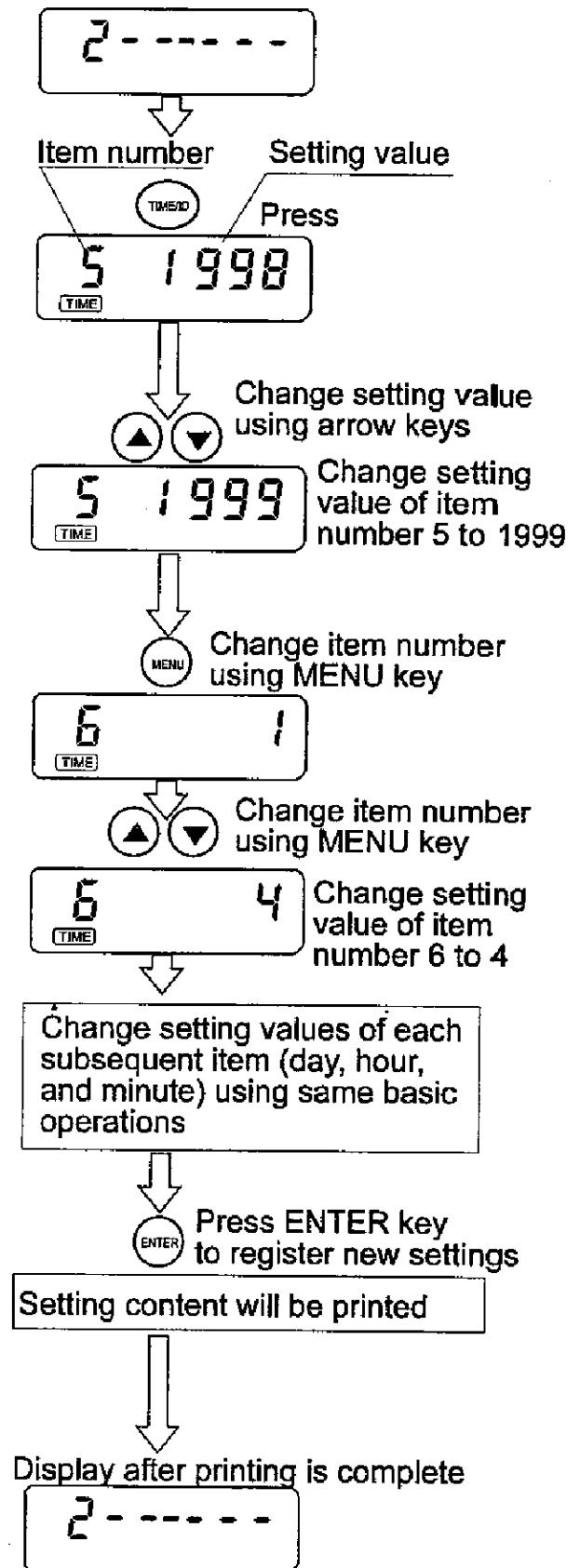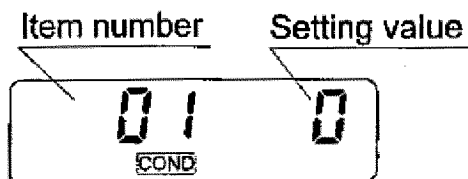
Explanation

- This function uses for the alarm at the measurement time. And it can set alarms up to six times.
- The above display appears when the INTERVAL key is pressed.
- The COND indicator is displayed during the operation.
- An explanation of the item numbers is provided in the table below.

Item number	Setting range	Setting content	
01	OFF, 0 ~ 23	First measurement time	(hour)
02	0 ~ 59	First measurement time	(minute)
03	OFF, 0 ~ 23	Second measurement time	(hour)
04	0 ~ 59	Second measurement time	(minute)
05	OFF, 0 ~ 23	Third measurement time	(hour)
06	0 ~ 59	Third measurement time	(minute)
07	OFF, 0 ~ 23	Fourth measurement time	(hour)
08	0 ~ 59	Fourth measurement time	(minute)
09	OFF, 0 ~ 23	Fifth measurement time	(hour)
10	0 ~ 59	Fifth measurement time	(minute)
11	OFF, 0 ~ 23	Sixth measurement time	(hour)
12	0 ~ 59	Sixth measurement time	(minute)

Refer to the operation manual of the blood pressure monitor (UA PC series) for details regarding this alarm function.

Setting Procedure

Step 1. When communication preparations are complete (refer to section 10.3.1 "Communication preparations"), press the INTERVAL key.

Step 2. The [COND] indicator will light and the time for the first alarm, set in the connected blood pressure monitor, will be displayed.

Step 3. To change the setting value, press the ▲ ▼ keys.
In this example the time for item number 1 (first alarm time (hour)) will be set to 10 (10:00AM).

Step 4. Press the MENU key to change item numbers and press the ▲ ▼ keys to change setting values.
In this example, the setting value in item number 2 (first alarm time (minutes)) will be set to 30 (30 minutes).

Step 5. When changes in the second alarm and subsequent alarm are required, use the same procedure to select item numbers and set the hour and minute.

Step 6. Press the ENTER key to register changes and exit the setting mode.
The new setting for the blood pressure monitor will be printed. Please check the content of the setting.

Step 7. If the CANCEL key is pressed without pressing the ENTER key, the current setting will be canceled. Then the blood pressure monitor will not be changed.

Item number — Setting value

(INTERVAL) Press

01   0 [COND]

Frist Alarm ▲▼ Change setting value using arrow keys

01   10 [COND] — Set the measurement time to 10:00am

(MENU) Use MENU key to change item number

02   0 [COND]

▲▼ Change setting value using arrow keys

02   30 [COND] — Set to 30 minutes

Set subsequent alarms using same operations

(ENTER) Press ENTER key to register new settings

Setting content will be printed

Display after printing is complete

10.3.5. Memory Clear

Explanation
The MEMORY CLEAR key is used to delete measurement data in the blood pressure monitor (UA PC series).

Setting Procedure
Step 1. When communication preparations are complete (refer to section 10.3.1 "Communication preparations"), press and hold the MEMORY CLEAR key. The buzzer will beep every second, and after 5 seconds a long buzzer sound will be heard.
After measurement data has been cleared, the message "MEMORY CLEARED" will be printed.
When measurement data has not been cleared, the message "MEMORY CLEAR FAILED" will be printed.

Step 2. When the MEMORY CLEAR key is not pressed and held for 5 seconds, the measurement data will not be deleted. In this case no message will be printed.

Press and hold
MEMORY CLEAR key

Message is printed

Display after printing is complete

⚠ Caution!
Be careful when using these operations since measurement data cleared from the blood pressure monitor cannot be recovered. Be sure to execute measurement data processing before clearing the memory.

10.3.6.   Printing of Setting List

Explanation

The alarm time set in the blood pressure monitor (UA PC series) will be printed.

Procedure

Step 1.   When communication preparations are complete (refer to section 10.3.1 "Communication preparations"), press the ENTER key. Printing will begin.

Notice

When no blood pressure monitor is connected, no printing will be done.

(ENTER) Press

Printing of alarm time

Display after printing is complete.
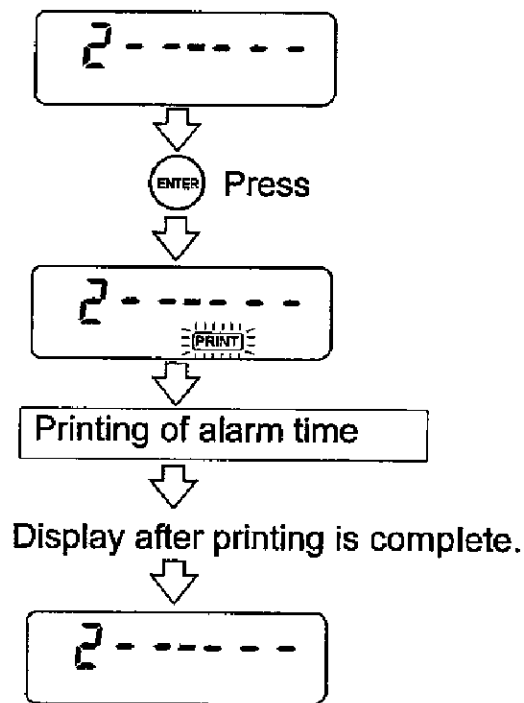
10.4. Model 3, Operation and Setting

When model 3 is selected (10.1.1 "Model selection") , operations are outlined in the following flowchart.

Model name: UB PC series

POWER ⏻   Turning on

`/ ------`   Standby mode.
Model connected when the power
was previously turned off will be shown.

MODEL   Model Selection

In the Model 3   Refer to 10.1 "Overall operation flow"

Communication preparations   Refer to 10.4.1 "Communication preparations"

`3 - ----`   `---`   Refer to 10.4.1 "Communication preparations"

Blood pressure monitor

UPLOAD PRINT

UPLOAD PRINT   Refer to 10.4.2 "Data upload and printing"

In the Model 3   The ☐ means operation status.

When model 3 is selected the functions that can be used with the printer terminal are limited. The functions and various setting that can be used are shown in the table below. For a detailed description of the setting methods, refer to the reference section listed in the table below.

Function name	Content	Reference section
UPLOAD/PRINT	Upload and print measurement data	10.4.2 "Data Upload Printing"

Only one-way communication functions can be used with model 3. The blood pressure monitor time setting and measurement data clearing operation are done on the blood pressure monitor side. Use the printer after reading the operation manual of the blood pressure monitor (UB PC series).

A special communications adapter, sold separately, is required with model 3.

⚠ Caution!

When the unit is left with the communication cable inserted in the blood pressure monitor, the batteries will rapidly drain. Therefore, when communications are complete, unplug the cable. When the cable is unplugged the blood pressure monitor will return to the clock display.

10.4.1. Communication Preparations

Step 1. Connect the special communications adapter, sold separately, to the connector on the back of the printer terminal (refer to section 9. "Preparation").

Step 2. Connect the mini-pin jack end of the special communications adapter to the blood pressure monitor (UB PC series).

Step 3. The blood pressure monitor display will change to ⬚.

Step 4. When the display changes communication preparations are complete.
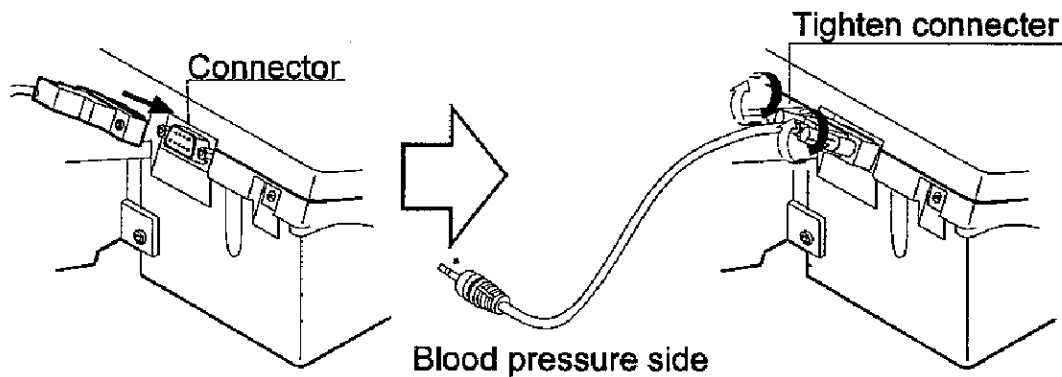
Connector

Tighten connecter

Blood pressure side

⚠ Caution!

- When the unit is left with the communication cable inserted in the blood pressure monitor, the batteries will rapidly drain. Therefore, when communications are complete, remove the cable. When the cable is removed the blood pressure monitor will return to the clock display.
- The preparation procedure is different about several blood pressure monitors. Refer to each instruction manual of the blood pressure monitor.

10.4.2.   Data Upload and Printing

Explanation

- Press the UPLOAD PRINT key then immediately press the start switch on the blood pressure monitor. Measurement data will be uploaded from the blood pressure monitor. Measurement results will then be printed using the standard report format.
  With model 3 the report format cannot be selected.

- When measurement data is uploaded, the [BP.M] indicator is displayed
  Measurement data uploading is complete when this indicator is displayed.   The communication cable can be unplugged from the blood pressure monitor at this time.

Procedure

Step 1.   Confirm that communication preparations are complete (refer to section 10.4.1 "Communication preparations").

Step 2.   Press the UPLOAD/PRINT key. The printer will enter the communication wait mode.

Step 3.   Immediately press the start switch of the blood pressure monitor. Measurement data will be sent from the blood pressure monitor.

Step 4.   The measurement data will be uploaded to the printer and the [BP.M] indicator is displayed when uploading is complete.

Step 5.   Next, printing will begin. The [PRINT] indicator will blink during printing.

Step 6.   The [PRINT] indicator will go out when printing is complete.
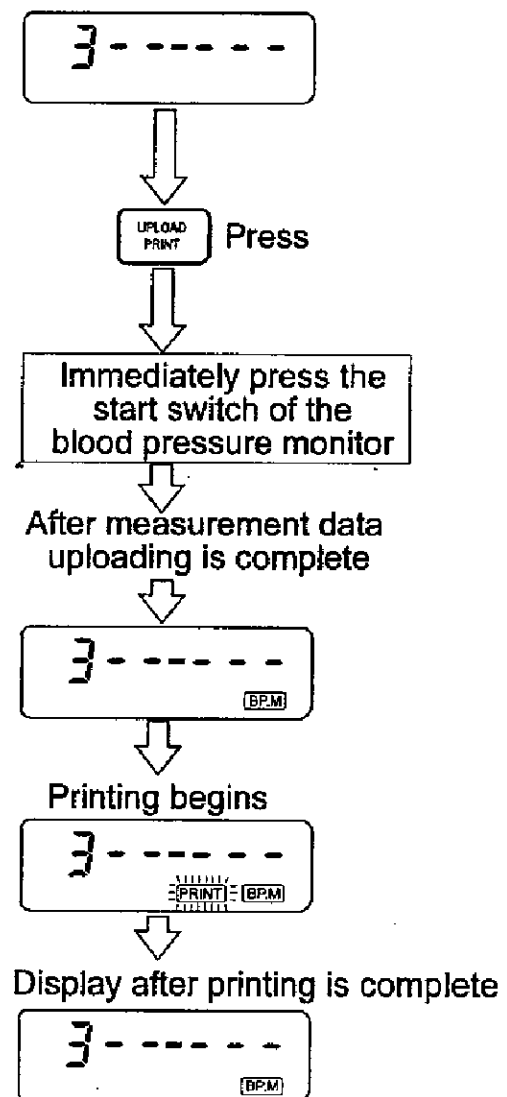
11. Maintenance

11.1. Cleaning

- When cleaning the unit, first turn the power off and unplug the AC adapter from the printer terminal. In addition, remove the batteries, if present, after the power is turned off.
- Wipe the unit with a dry cloth.
- When the printer is too dirty, clean using a well-wrung cloth wet with a neutral cleaner.
- The printer terminal is not waterproof. Do not wet the unit when cleaning.
- Do not clean using thinner or other organic solvents.

11.2. Before Requesting Repairs

- Do not open the case and do not allow anyone other than authorized personnel to repair the unit. Such repairs may cause damage or fires.
- Before assuming that the unit is broken, try solving the problem by matching the error number displayed on the LCD with the measures described below. If the problem persists, contact the nearest business representative of A & D Co., Ltd.

Notice

When an error is displayed the power must first be turned off before operation can be started again. Turn the power off, then on again.

Error number	Error content	Cause or countermeasure for problem
E01	Memory error	- Remove the AC adapter or batteries and insert again. Turn the power on.
E02		If the error re-appears, send the unit in for repair.
E11	Communication error	- Is the communication cable properly connected? - Do the connected blood pressure monitor and the selected model match? - Is the communication method correct? (when using model 1) - Have communication preparations been properly carried out? (preparations are different depending on the model)
E12	Infrared communication device error	- Remove the AC adapter or batteries and insert again. Turn the power on. If the error re-appears, send the unit in for repair.
E21	Paper jam	- Is the paper jammed?

12. Options

Part name	Order code
Printer paper (5 rolls)	AX-PP147-S
Communication cable (for models 1 and 2) The same cable as the accessory cable	AX-KO1502

13. Appendix

13.1. External Diagrams

TM-2480
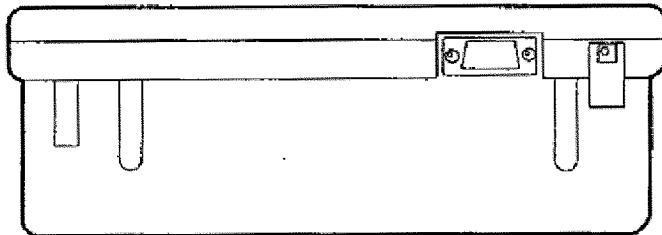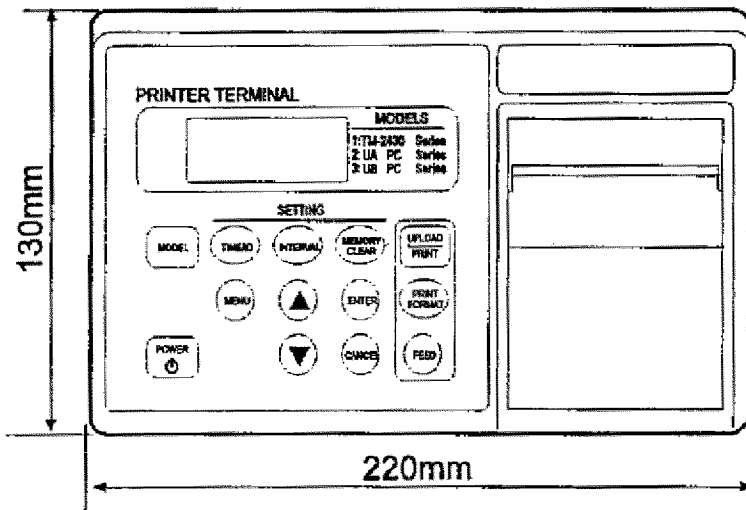
Back panel

Front panel

Side panel

85mm

220mm

130mm

TM-2481

Back panel

PRINTER TERMINAL

MODELS
1:TM-2430 Series
2:UA PC Series
3:UB PC Series

SETTING

MODEL · TIME/AD · INTERVAL · MEMORY/CLEAR · UPLOAD/PRINT

MENU · ▲ · ENTER · PRINT FORMAT

POWER ⏻ · ▼ · CANCEL · FEED

180mm

220mm

Front panel

90mm
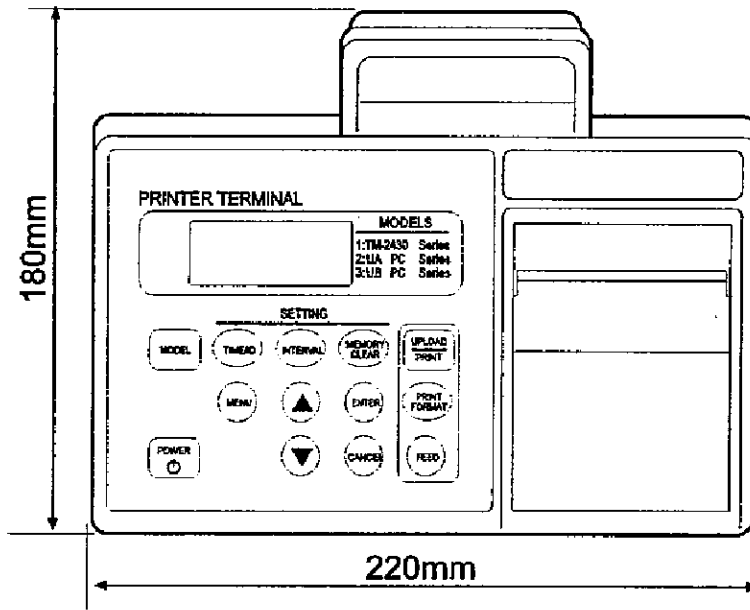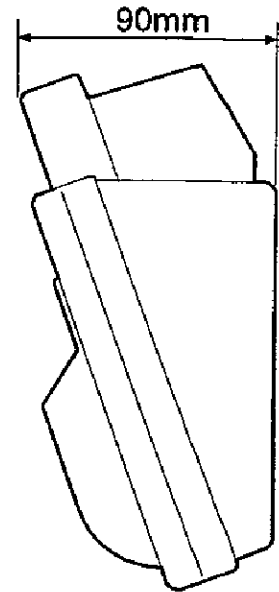
Side panel

13.2. Printout Examples

Printout example for TM-2430 series (printing is done in the sequence shown below every 24 hours)

TYPE: MODEL1(ABPM)
  INTERVAL: MODE II

TYPE: MODEL1(ABPM)

  10/22 1998 ID.1
      SYS DIA[mmHg] PUL[/min]
    TIME SYS DIA PUL ERR EV

(Table)

BLOCK1   0 TO 0 HOUR
                    N= 79
SYS AVE=133 S.D.=12.0
DIA AVE= 93 S.D.=10.5
PUL AVE= 74 S.D.= 9.3
PRESSURE LOAD
SYS>140/120:   67.4[mmHg·h]
DIA> 90/ 80: 146.9[mmHg·h]

TOTAL(24H) 10 TO 10 HOUR
                    N= 79
SYS AVE=133 S.D.=12.0
DIA AVE= 93 S.D.=10.5
PUL AVE= 74 S.D.= 9.3
PRESSURE LOAD
SYS>140/120:   67.4[mmHg·h]
DIA> 90/ 80: 146.9[mmHg·h]
ERR RATE   :   1.2[%]

AWAKE   7 TO 22 HOUR
                    N= 60
SYS AVE=138 S.D.= 9.0
DIA AVE= 97 S.D.= 7.5
PUL AVE= 78 S.D.= 6.4
PRESSURE LOAD
SYS>140   :   34.9[mmHg·h]
DIA> 90   : 107.8[mmHg·h]

SLEEP   22 TO 7 HOUR
                    N= 19
SYS AVE=120 S.D.=10.2
DIA AVE= 81 S.D.=10.5
PUL AVE= 64 S.D.= 9.3
PRESSURE LOAD
SYS>   120:   32.6[mmHg·h]
DIA>   80:   39.1[mmHg·h]

Table

-BLOOD PRESSURE TREND-
   10/22 1998 ID.1
          DIA SYS[mmHg]
h 50 100 150 200 250 300

Blood pressure trend

-PULSE RATE TREND-
   10/22 1998 ID.1
             PUL [/min]
h 0   50 100 150 200 250

Pulse trend

-PRESSURE LOAD TREND-
   10/23 1998 ID.1
          DIA SYS[mmHg]
h 50 100 150 200 250 300

Pressure load trend

Explanation of printout example for TM-2430 series

Table data printout

Model number → TYPE: MODEL1(ABPM)

Measurement date and ID number → 10/22 1998 ID.1

Data units →

```
             SYS DIA[mmHg] PUL[/min]
        TIME  SYS DIA PUL ERR EV
    1  10:00  141  96  78
    2  10:15  121  89  82
    3  10:30  127  82  85
    4  10:45  132  98  76
    5  11:00  146  99  88
    6  11:15  153 105  80
    7  11:30  142 108  83
    8  11:45  132  96  76
    9  12:00  129  93  71
   10  12:15  --- --- --- E07
   11  12:18  143  98  82
   12  12:30  143  98  82
   13  12:45  155 108  67
   14  13:00  144 100  68
   15  13:15  149 103  73
   16  13:30  138  96  79
   17  13:45  137  92  76
   18  14:00  129  95  83
   19  14:15  133  97  87
   20  14:30  140  99  73
   21  14:45  131  91  66
   22  15:00  138  99  82
   23  15:15  138  98  82
   24  15:30  151 110  87
   25  15:45  141  96  83
   26  16:00  135  99  81
   27  16:15  143 103  76
   28  16:30  149 105  77
   29  16:45  144 101  75
   30  17:00  149 110  84
   31  17:15  138  98  83
   32  17:30  135  98  73
   33  17:45  146 107  68
   34  18:00  144  98  92
   35  18:15  140  96  83
   36  18:30  147 102  76
   37  18:45  146 105  77
   38  19:00  153 111  66
   39  19:15  144  99  80
   40  19:30  150 103  75
   41  19:45  147  96  78
   42  20:00  135  85  80
   43  20:15  132  83  83
   44  20:30  122  81  73
   45  20:45  123  83  66
   46  21:00  124  85  67
   47  21:15  136  88  68
   48  21:30  137  95  72
   49  21:45  126  89  66
   50  22:00  132  98  81
   51  22:10  139  98  75
   52  22:30  131  96  73
   53  23:00  118  82  77
   54  23:30  120  81  71

        10/23 1998 ID.1
   55   0:00  124  89  68
   56   0:30  111  77  64
   57   1:00  112  76  61
   58   1:30  115  77  57
   59   2:00  112  72  55
   60   2:30  111  70  60
   61   3:00  107  68  55
   62   3:30  113  73  53
   63   4:00  103  66  50
   64   4:30  118  73  52
   65   5:00  125  81  56
   66   5:30  124  83  64
   67   6:00  129  89  66
   68   6:30  137  98  72
   69   7:00  137 103  77
   70   7:15  134  96  82
   71   7:30  131  92  87
   72   7:45  132  87  83
   73   8:00  142  96  82
   74   8:15  139  96  73
   75   8:30  122  89  72
   76   8:45  123  87  72
   77   9:00  120  82  82
   78   9:15  140 104  80
   79   9:30  139  99  79
   80   9:45  122  84  82
```

24 hour table (10:00am ~ 9:59am for this example)

Measurement time — Systolic pressure — Diastolic pressure

TIME   SYS DIA PUL ERR EV

Pulse

Error code

E07 → Error code

* → Manual start

The "*" mark is printed when manual start is used.

The "S" mark is printed while displaying the "S" mark on the mode II.

Measurement while the S mark is lit

Date change

```
BLOCK1      0 TO  0 HOUR
                    N= 79
SYS  AVE=133 S.D.= 12.0
DIA  AVE= 93 S.D.= 10.5
PUL  AVE= 74 S.D.=  9.3
PRESSURE LOAD
SYS>140/120:   67.4[mmHg·h]
DIA> 90/ 80: 146.9[mmHg·h]
```

Printed for each measurement interval block.
However, since measurement interval block information is uploaded simultaneously with measurement data, the blocks here do not depend on the blocks used during actual measurement.

```
TOTAL(24H) 10 TO 10 HOUR
                    N= 79
SYS  AVE=133 S.D.= 12.0
DIA  AVE= 93 S.D.= 10.5
PUL  AVE= 74 S.D.=  9.3
PRESSURE LOAD
SYS>140/120:   67.4[mmHg·h]
DIA> 90/ 80: 146.9[mmHg·h]
ERR RATE  :   1.2[%]
```

Statistical results for 24 hour period

```
AWAKE       7 TO 22 HOUR
                    N= 60
SYS  AVE=138 S.D.=  9.0
DIA  AVE= 97 S.D.=  7.5
PUL  AVE= 78 S.D.=  6.4
PRESSURE LOAD
SYS>140    :   34.8[mmHg·h]
DIA> 90    :  107.8[mmHg·h]
```

Statistical results while awake

```
SLEEP      22 TO  7 HOUR
                    N= 19
SYS  AVE=120 S.D.= 10.2
DIA  AVE= 81 S.D.= 10.5
PUL  AVE= 64 S.D.=  9.3
PRESSURE LOAD
SYS>    120:   32.6[mmHg·h]
DIA>     80:   39.1[mmHg·h]
```

Statistical results while a sleep

```
BLOCK1      6 TO 18 HOUR
                    N= 46
SYS  AVE=137 S.D.=  8.6
DIA  AVE= 97 S.D.=  6.6
PUL  AVE= 78 S.D.=  6.0
PRESSURE LOAD
SYS>140/120:   37.9[mmHg·h]
DIA> 90/ 80:  102.7[mmHg·h]

BLOCK2     18 TO 22 HOUR
                    N= 16
SYS  AVE=138 S.D.= 10.1
DIA  AVE= 94 S.D.=  9.1
PUL  AVE= 75 S.D.=  7.5
PRESSURE LOAD
SYS>140/120:   11.8[mmHg·h]
DIA> 90/ 80:   22.1[mmHg·h]

BLOCK3     22 TO  6 HOUR
                    N= 17
SYS  AVE=119 S.D.=  9.6
DIA  AVE= 80 S.D.= 10.1
PUL  AVE= 63 S.D.=  9.6
PRESSURE LOAD
SYS>140/120:   17.6[mmHg·h]
DIA> 90/ 80:   22.1[mmHg·h]

TOTAL(24H) 10 TO 10 HOUR
                    N= 79
SYS  AVE=133 S.D.= 12.0
DIA  AVE= 93 S.D.= 10.5
PUL  AVE= 74 S.D.=  9.3
PRESSURE LOAD
SYS>140/120:   67.4[mmHg·h]
DIA> 90/ 80: 146.9[mmHg·h]
ERR RATE  :   1.2[%]

AWAKE       7 TO 22 HOUR
                    N= 60
SYS  AVE=138 S.D.=  9.0
DIA  AVE= 97 S.D.=  7.5
PUL  AVE= 78 S.D.=  6.4
PRESSURE LOAD
SYS>140    :   34.8[mmHg·h]
DIA> 90    :  107.8[mmHg·h]

SLEEP      22 TO  7 HOUR
                    N= 19
SYS  AVE=120 S.D.= 10.2
DIA  AVE= 81 S.D.= 10.5
PUL  AVE= 64 S.D.=  9.3
PRESSURE LOAD
SYS>    120:   32.6[mmHg·h]
DIA>     80:   39.1[mmHg·h]
```

This example shows the printout with only the measurement interval blocks changed. The base data used to obtain the above statistical data was also used here.

Changed to 3 blocks

The method for changing the measurement interval into 3 blocks, as shown in the example at right, is shown below.

Change method

Step 1. Set the blood pressure monitor to the connected mode.

Step 2. Change the measurement interval blocks of the blood pressure monitor (refer to section 10.2.5 "Measurement interval settings")

Step 3. Press the UPLOAD PRINT key.

The TOTAL (24H)/AWAKE/SLEEP content will be the same as the above printout.

Statistical data printout

Block time zone

Number of data points within this time zone

Average (AVE) SYS/DIA/PUL values and standard deviation (S.D.)

Pressure load

BLOCK1   0 TO   0 HOUR
N= 79
SYS AVE=133 S.D.= 12.0
DIA AVE= 93 S.D.= 10.5
PUL AVE= 74 S.D.= 9.3
PRESSURE LOAD
SYS>140/120:   67.4[mmHg·h]
DIA> 90/ 80: 146.9[mmHg·h]

TOTAL<24H> 10 TO 10 HOUR
N= 79
SYS AVE=133 S.D.= 12.0
DIA AVE= 93 S.D.= 10.5
PUL AVE= 74 S.D.= 9.3
PRESSURE LOAD
SYS>140/120:   67.4[mmHg·h]
DIA> 90/ 80: 146.9[mmHg·h]
ERR RATE :   1.2[%]

AWAKE   7 TO 22 HOUR
N= 60
SYS AVE=138 S.D.= 9.0
DIA AVE= 97 S.D.= 7.8
PUL AVE= 78 S.D.= 6.4
PRESSURE LOAD
SYS>140   :   34.8[mmHg·h]
DIA> 90   : 107.8[mmHg·h]

SLEEP   22 TO 7 HOUR
N= 19
SYS AVE=120 S.D.= 10.2
DIA AVE= 81 S.D.= 10.5
PUL AVE= 64 S.D.= 9.3
PRESSURE LOAD
SYS>   120: 32.6[mmHg·h]
DIA>   80: 39.1[mmHg·h]

Threshold systolic pressure during awake time

Threshold systolic pressure during sleep time

SYS>140/120:   67.4[mmHg·h]

Total surface area under measurements exceeding the threshold value (darkened area)

SYS: Systolic blood pressure
DIA: Diastolic blood pressure

Pressure load trend

[mmHg]

Threshold value of SYS for awake.

Threshold value of SYS for sleep.

Threshold value of SYS for awake.

150

100

50

Threshold value of DIA for awake.

Threshold value of DIA for sleep.

Threshold value of DIA for awake.

Line of SYS

Line of DIA

10   22   7   10   [Time]

Awake time   Sleep time   Awake time

-BLOOD PRESSURE TREND-

Blood pressure trend graph

10/23 1998 ID. 1 — Measurement date and ID number

DIA SYS [mmHg] — Data units

Measurement values are printed with SYS and DIA tied by a line

Sleep time

Threshold value of SLEEP DIA

Threshold value of SLEEP SYS

Threshold value of AWAKE SYS

Awake time

Threshold value of AWAKE DIA

-PULSE RATE TREND-

Pulse trend graph

10/23 1998 ID. 1

PUL [/min]

3 dot printing of measurement values

-PRESSURE LOAD TREND-

Pressure load trend graph

10/23 1998 ID. 1

DIA SYS [mmHg]

Printed with SYS connected

Printed with DIA connected

Area darkened when threshold values are exceeded

Printer Terminal

Setting content printout

```
TYPE: MODEL1 (ABPM)

  10/22 1998 ID. 1

  INTERVAL: MODE III

  START    STOP    INTERVAL
     6 ----> 18    30 MIN.
    18 ----> 22    15 MIN.
    22 ---->  6    60 MIN.

  DISPLAY          ON
- - - - - - - - - - - - - - - - - - - -
  PRINT FORM              1
  TREND START TIME     AUTO
  SLEEP TIME             22
  AWAKE TIME              7

  BP. LIMIT[mmHg]

         AWAKE  SLEEP
  SYS     140    120
  DIA      90     80
```

- Model number
- Current time on blood pressure monitor
- Automatic measurement mode currently set on blood pressure monitor
- Time zones and intervals of measurement blocks
- Display function on/off
- Report format
- Start time for trend graphs
- Sleep time
- Awake time
- Pressure load threshold value

Blood pressure monitor settings

Printer terminal settings

Printout when TIME/ID setting is complete

```
TYPE: MODEL1 (ABPM)

1 DISPLAY          ON
2 I.D. NO.          1
5 YEAR          1998
6 MONTH           10
7 DAY            22
8 HOUR           10
9 MINUTES         3
```

- Model number

Printout when INTERVAL setting is complete

```
TYPE: MODEL1 (ABPM)

  INTERVAL: MODE I

  START    STOP    INTERVAL
     7 ----> 22    15 MIN.
    22 ---->  7    30 MIN.
```

- Example for automatic measurement mode I
- Fixed

```
TYPE: MODEL1 (ABPM)

  INTERVAL: MODE II

  DURING              INTERVAL
  [S]MARK OFF         15 MIN.
  [S]MARK ON          30 MIN.
```

- Example for automatic measurement mode II
- Fixed

```
TYPE: MODEL1 (ABPM)

  INTERVAL: MODE III

  START    STOP    INTERVAL
     6 ----> 18    30 MIN.
    18 ----> 22    15 MIN.
    22 ---->  6    60 MIN.
```

- Example for automatic measurement mode III
- Block 1
- Block 2
- Block 3

This is only an example. The newly input settings are printed.

Printout example for UA PC series /UB PC series
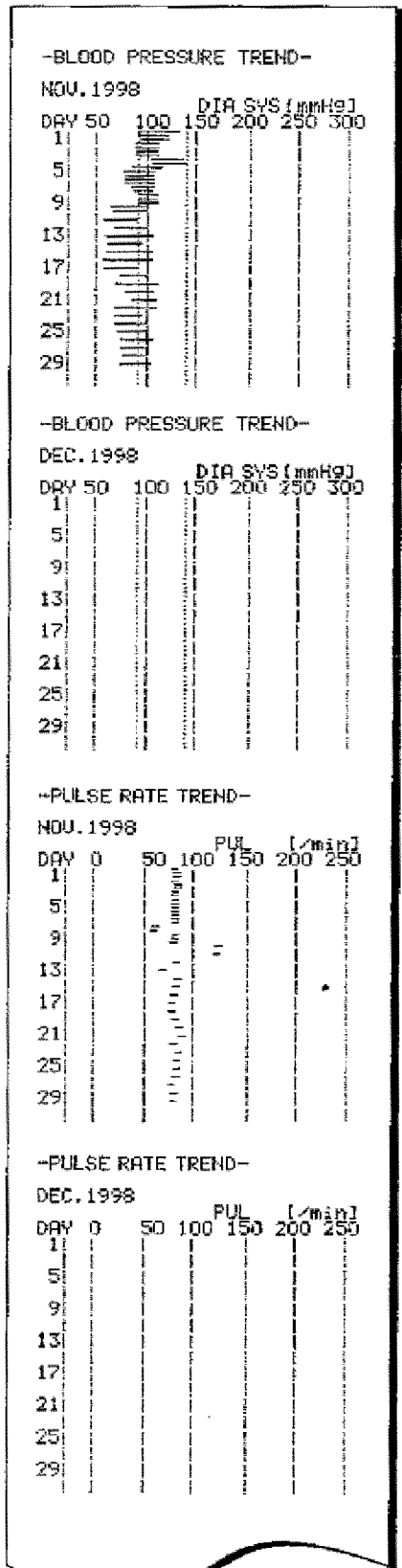

TYPE: MODEL2 (B CBPM)

1998
SYS DIA[mmHg] PUL[/min]

Table
All data is printed

NOV. 1998   N= 40
SYS AVE=112 S.D.= 12.1
DIA AVE= 79 S.D.= 15.8
PUL AVE= 82 S.D.= 19.7
SYS>=140 :N=   2<   5.0%>
DIA>= 90 :N=   9< 22.5%>

DEC. 1998   N=   X
SYS AVE= - S.D.= -
DIA AVE= - S.D.= -
PUL AVE= - S.D.= -
SYS>=140 :N= -<   -%>
DIA>= 90 :N= -<   -%>

TOTAL   N= 40
SYS AVE=112 S.D.= 12.1
DIA AVE= 79 S.D.= 15.8
PUL AVE= 82 S.D.= 19.7
SYS>=140 :N=   2<   5.0%>
DIA>= 90 :N=   9< 22.5%>

-BLOOD PRESSURE TREND-
NOV. 1998   DIA SYS[mmHg]
DAY 50   100 150 200 250 300

-BLOOD PRESSURE TREND-
DEC. 1998   DIA SYS[mmHg]
DAY 50   100 150 200 250 300

Blood pressure trend
Printed with values for each month collected together

-PULSE RATE TREND-
NOV. 1998   PUL [/min]
DAY 0   50 100 150 200 250

-PULSE RATE TREND-
DEC. 1998   PUL [/min]
DAY 0   50 100 150 200 250

Pulse trend
Printed with values for each month collected together

TYPE: MODEL2 (B CBPM) ← Model number
1998 ← Year of measurement
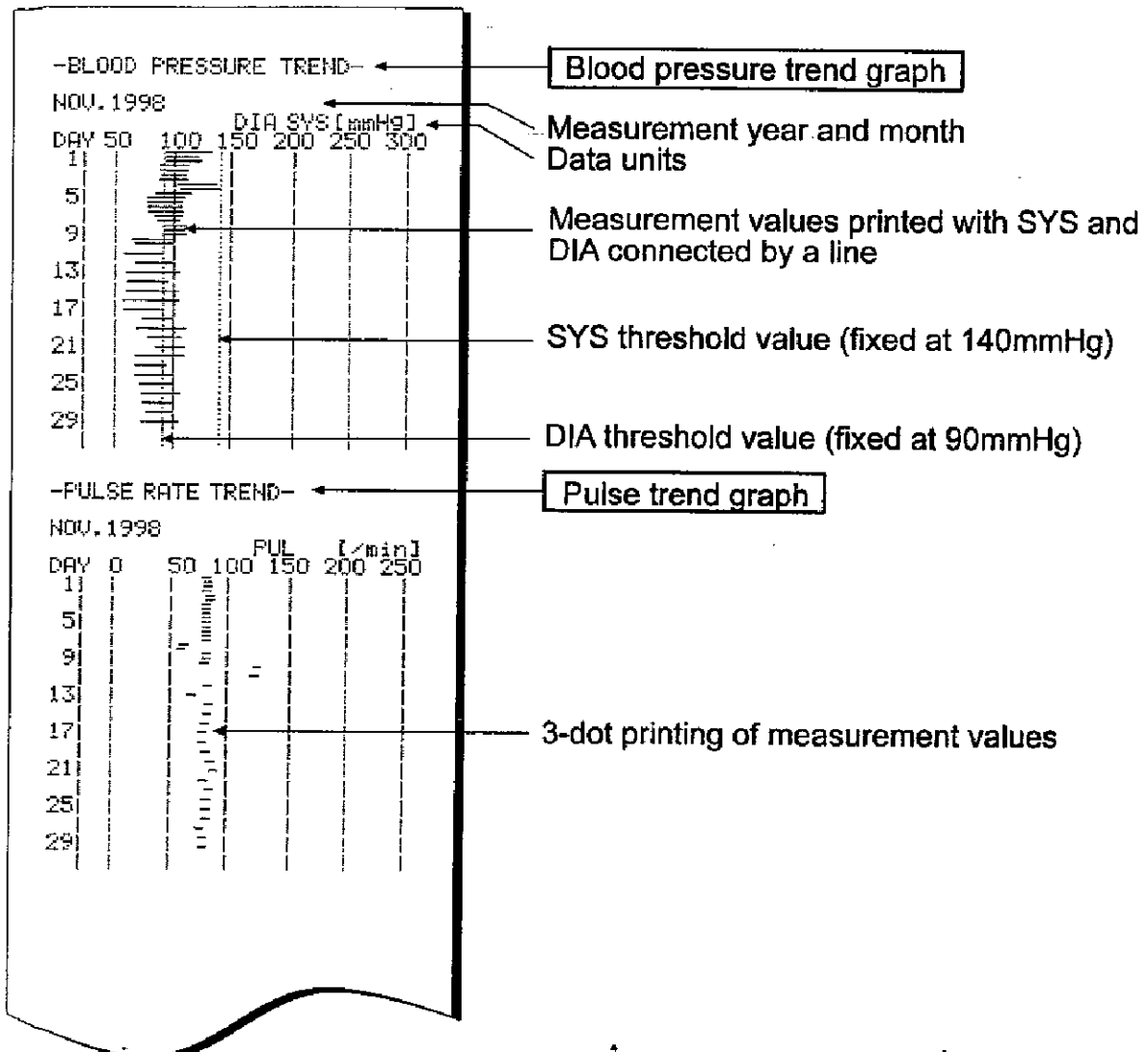SYS DIA[mmHg] PUL[/min] ← Data units
```
     DATE   TIME  SYS DIA PUL
 1 11/ 1  7:32 132  95  79
 2 11/ 1 21:02 120  92  80
 3 11/ 2  7:07 124  95  80
 4 11/ 3 22:09 115  86  79
 5 11/ 3  6:59 112  86  80
 6 11/ 3 22:16 113  88  80
 7 11/ 4  8:00 116  87  79
 8 11/ 4 23:01 136 104  79
 9 11/ 5  7:23 143 106  79
10 11/ 5 21:56 122  82  79
11 11/ 6  7:13 110  72  79
12 11/ 6 20:00 109  72  79
13 11/ 7  7:05 109  72  79
14 11/ 7 21:39 111  72  79
15 11/ 8  7:24 110  80  79
16 11/ 8 23:03 109  83  60
17 11/ 9  8:35 115  82  59
18 11/ 9 21:54 116  91  80
19 11/10  8:13 117  90  80
20 11/10 19:43 104  64  79
21 11/11  6:25 102  66 120
22 11/12  8:04  93  56 118
23 11/13  8:05 102  68  78
24 11/14  7:16 109  60  67
25 11/15  7:12  98  63  81
26 11/16  8:03 106  64  74
27 11/17  8:11 107  61  71
28 11/18  7:12  92  60  71
29 11/19  7:31 104  75  74
30 11/20  8:18 112  70  83
31 11/21  7:24 109  75  81
32 11/22  8:17 115  80  83
33 11/23  7:54 112  70  71
34 11/24  8:25  95  68  87
35 11/25  7:17 101  68  81
36 11/26  8:07 103  72  80
37 11/27  7:08 113  73  81
38 11/28  6:59 104  70  76
39 11/29  7:10 103  76  79
40 11/30  8:07 109  74  79
41 12/01  ───   ─   ─   ─
   :     :      :   :   :
```

DATE TIME SYS DIA PUL

Pulse → PUL
Diastolic pressure → DIA
Systolic pressure → SYS
Measurement time → TIME
Measurement date → DATE

```
NOV. 1998          N=  40
SYS  AVE=112  S.D.= 12.1
DIA  AVE= 79  S.D.= 15.8
PUL  AVE= 82  S.D.= 19.7
SYS>=140  :N=    2(  5.0%)
DIA>= 90  :N=    9( 22.5%)

DEC. 1998          N=   X
SYS  AVE=  ─  S.D.=   ─
DIA  AVE=  ─  S.D.=   ─
PUL  AVE=  ─  S.D.=   ─
SYS>=140  :N=   ─ (  ─ %)
DIA>= 90  :N=   ─ (  ─ %)

TOTAL              N=  40
SYS  AVE=112  S.D.= 12.1
DIA  AVE= 79  S.D.= 15.8
PUL  AVE= 82  S.D.= 19.7
SYS>=140  :N=    2(  5.0%)
DIA>= 90  :N=    9( 22.5%)
```

Statistical results for each month

Statistical results for all data

-BLOOD PRESSURE TREND- ← | **Blood pressure trend graph**

NOV.1998 ← Measurement year and month
Data units

DIA SYS[mmHg] ←

DAY 50 100 150 200 250 300
  1| | | | | |
  5| | | | | |
  9| | | | | | ← Measurement values printed with SYS and DIA connected by a line
 13| | | | | |
 17| | | | | |
 21| | | | | | ← SYS threshold value (fixed at 140mmHg)
 25| | | | | |
 29| | | | | | ← DIA threshold value (fixed at 90mmHg)

-PULSE RATE TREND- ← | **Pulse trend graph**

NOV.1998

PUL [/min]

DAY 0 50 100 150 200 250
  1| | | | | |
  5| | | | | |
  9| | | | | |
 13| | | | | |
 17| | | | | | ← 3-dot printing of measurement values
 21| | | | | |
 25| | | | | |
 29| | | | | |

| **UA PC Series**

TYPE: MODEL2 (B CBPM) ← Model number

MEASUREMENT TIME
----
  1   10:00
  2   12:30
  3   16:00   ← Alarm settings
  4   20:00
  5   22:00
  6   6:30

TYPE: MODEL2 (B CBPM)

  5 YEAR   1998
  6 MONTH   5
  7 DAY   6   ← Internal clock setting
  8 HOUR   16
  9 MINUTES   13