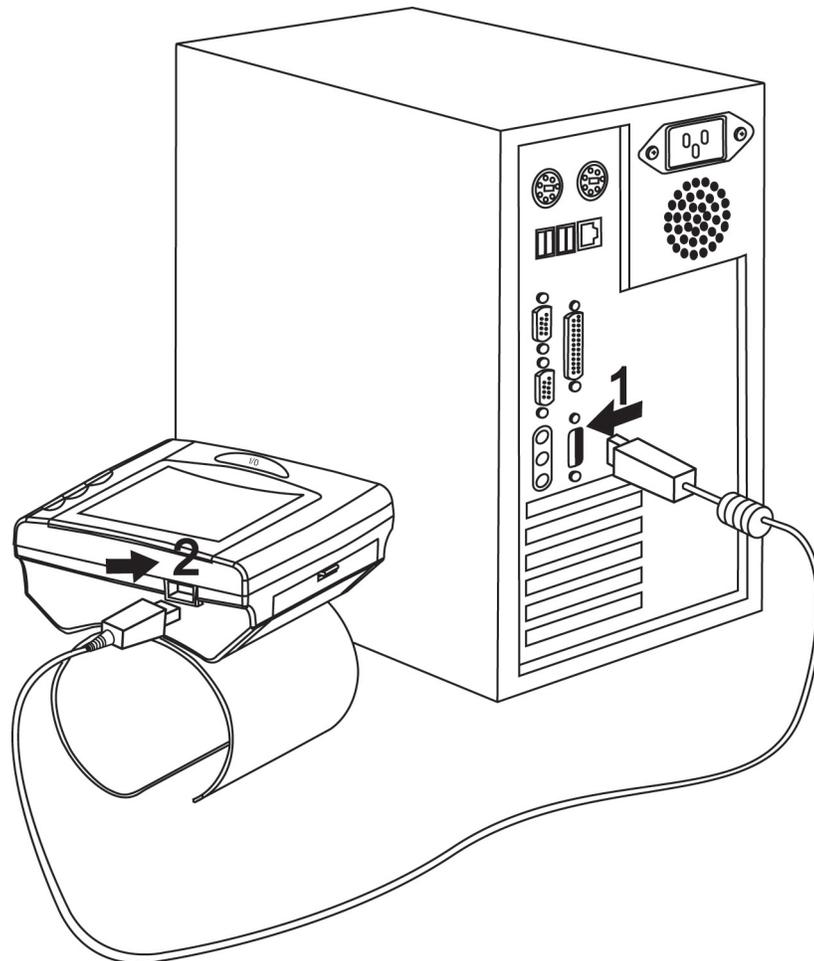




Connecting the BPM to a Computer

Refer to the following illustration and instructions to connect the Blood Pressure Monitor (BPM) to a computer for data transfer:



2. Plug the Mini-USB of the cable into the 4-pin Mini-USB port of your device.

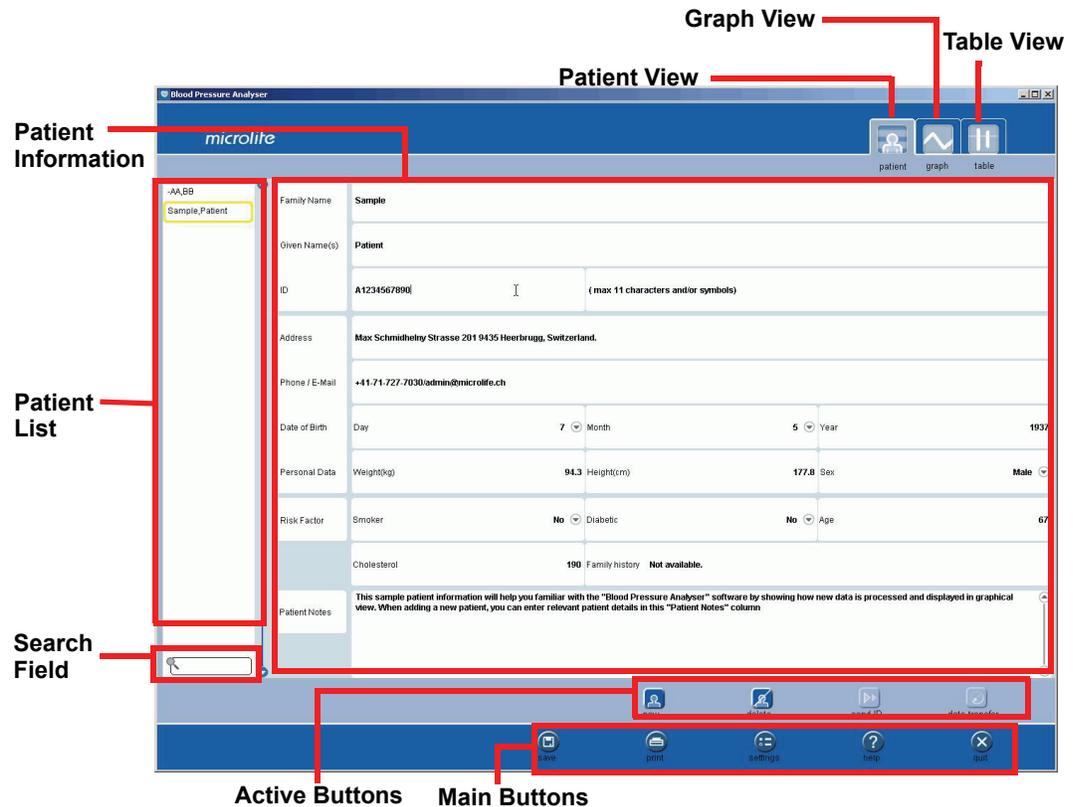
1. Plug the USB jack of the cable into your PC USB port.



Program Overview

About the Main Program Window

The following displays the Blood Pressure Analyzer (BPA) program's Patient Profile window:



Patient Information: used to create a patient profile.

Patient List: displays a list of patients already in the system. A sample patient profile is available for your reference.

Search Field: used to search for a patient by name.

Active Buttons: specific program buttons that allow for creation or deletion of patient profiles, send patient IDs to the BPM, or transfer patient data from the BPM to the computer.

Main Buttons: used to set program settings, save profiles, print data pages and exit the program. Click "help"  to open the help file.



Getting Started



The following steps provide a quick guide to getting started in using the Blood Pressure Analyzer program.

- Press  to fill out a [patient profile](#). A sample patient profile exists for your reference.
- The [time and date](#) for the BPM can be set automatically from the computer in the [Settings](#)  screen.
- Press  to [send the patient ID](#) to the BPM. Next time the BPM is connected the patient profile opens automatically.
- To [transfer data](#) saved on the BPM, press . The saved measurements are transferred to the data page and displayed in the [graph view](#).
- [Comments](#)  can be set by dragging and dropping to a date in the graph.
- Select a patient's name in the [patient list](#) to view the profile for that patient.
- [Search](#) for a patient by typing the patient's family name in the search field.

Note: Click the orange hyperlinks for more information on the underlined items.



Program Buttons

Main Program Buttons

The following buttons are available at all times when using the program. Click the orange hyperlinks for more information on the button's function.



Save – click this button to save the patient profile.



Print – click this button to print the various data screens. A Print Preview is first displayed, where the document type to be printed, can be selected from the drop-down list in the upper left corner.

PrintPreview

PatientProfile 1 page of 1 pages setting

Blood Pressure Analyser		2004/02/06	
Family Name	Sample		
Given Name(s)	Patient		
ID	A1234567890	(11 characters and/or symbols at most)	
Address	Max Schmidheiny Strasse 201 9435 Heerbrugg, Switzerland.		
Phone / E-Mail	+41-71-727-7020/admin@microlife.ch		
Date of Birth	Day	7 Month	5 Year
Personal Data	Weight	Height	Sex
Risk Factor	Smoker	No Diabetic	No Age
	Cholesterol	190	Family history

Add address physician

print ok cancel



Program Buttons



Settings – click to set preferences for time and date, select pulse pressure or Mean Arterial Pressure (MAP) view, set the systolic and diastolic pressure standards, set the BPM clock, and export/import patient profiles to and from the program's database.



Help – click this button to access the BPA program's online help.



Quit – click to quit the BPA program.



Program Buttons

Special Program Buttons

The following describes special button functions.

Note: When buttons are not available for use, they appear shaded. For example, when the BPM is not connected to a PC, the transfer button appears as shown to the right.



Patient View Patient view is where patient profiles are created or deleted, send patient ID numbers, or transfer patient data from the BPM to the BPA.



[New Patient](#) – click to create a new patient profile.



[Delete Patient](#) – click to delete the selected patient profile. When the patient profile library is empty or no patient profile is selected, this command is unavailable.



[Send ID](#) – click to send a patient's identification number to the BPM. The connected BPM is synchronized with the open patient profile and the Send ID is invalid until a new patient profile is selected.



[Transfer data](#) – click to transfer saved measurements from the BPM to the program.



Managing Patient Profiles



Graph View

Graph View allows you to view a graphical representation of patient data, view statistics related to the data, and attach comments.



[Comments](#) – click this button to enter supplementary patient information.



[Statistics](#) – click this button to view high, low and average values for systolic and diastolic pressure, pulse rate, and either MAP (Mean Arterial Pressure) or PP (Pulse Pressure).



[Graph](#) – click to display data in a graphical format.



[Histogram](#) – click to display data in a histogram format.



[Correlation](#) – click to display data in a correlation graph.

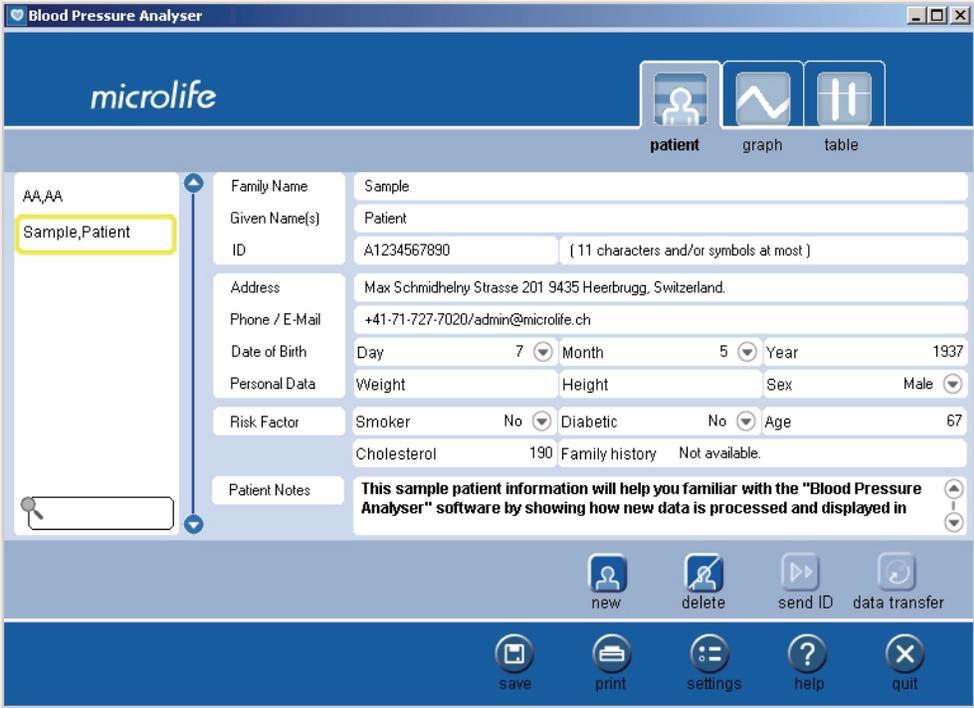


Managing Patient Profiles



Creating Patient Profiles

This section describes the process of creating and filling out a patient profile. Click patient view  to view the patient profile screen.



The screenshot shows the 'Blood Pressure Analyser' software interface. The title bar reads 'Blood Pressure Analyser'. The main header features the 'microlife' logo and three navigation icons: 'patient' (selected), 'graph', and 'table'. Below the header, there are three tabs: 'patient', 'graph', and 'table'. The 'patient' tab is active, displaying a form for entering patient information. The form includes fields for Family Name, Given Name(s), ID, Address, Phone / E-Mail, Date of Birth (Day, Month, Year), Personal Data (Weight, Height, Sex), Risk Factor (Smoker, Diabetic, Age), Cholesterol, and Family history. A 'Patient Notes' section contains a sample text: 'This sample patient information will help you familiar with the "Blood Pressure Analyser" software by showing how new data is processed and displayed in'. At the bottom of the form, there are five icons: 'new', 'delete', 'send ID', 'data transfer', 'save', 'print', 'settings', 'help', and 'quit'.

Creating a New Profile

1. Press  to create a new Patient profile.
2. Enter the patient's information:
 - Family Name (required)
 - Given Name(s) (required)
 - ID (required) is provided by the physician and can not be changed by the patient.



Managing Patient Profiles



3. Enter the patient's contact information and birth data.
 - Address/Phone/Email address
 - Date of Birth – press  to select the patient's month, day, and year of birth from the drop-down list
4. Enter the patient's personal data information.
 - Weight – type the patient's weight (kilograms or pounds)
 - Height – type the patient's height (centimeters or inches)
 - Sex – press  to select the patient's gender from the drop-down list
5. Enter information pertaining to the patient's health and risk factors.
 - Smoker – press  to select yes or no for whether the patient smokes
 - Diabetic – press  to select yes or no for whether the patient has diabetes
 - Age – age is automatically calculated from the birth date entry
 - Cholesterol – type the patient's cholesterol levels
 - Family History – type family related information pertaining to the patient's medical condition
 - Patient Notes – type miscellaneous information related to the patient

Deleting a Patient Profile

Select a profile from the patient profile list and click  to delete the patient's record from the BPA program.

Searching for a Patient

Patient profiles can be searched by entering the patient's name in the Search field.

Type the patient's name in the Search field.

The program lists all patients with names that have the same first letter.



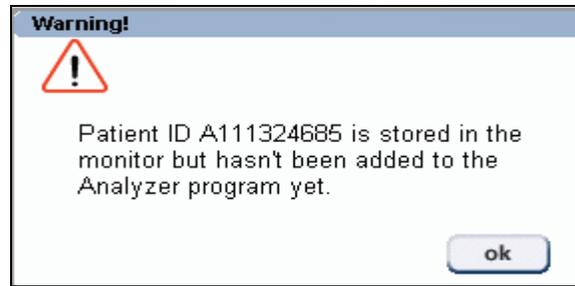
Managing Patient Profiles



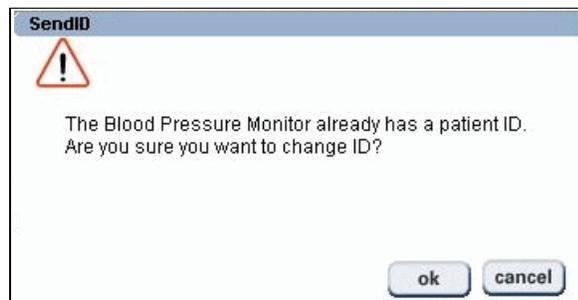
Managing Patient IDs

If the BPM is connected to a computer, the Send ID button becomes available allowing you to transfer new patient IDs to the BPM or change the IDs on the BPM.

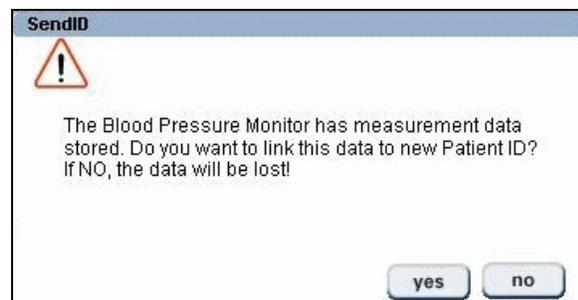
1. Connect the BPM to the computer. If a patient ID exists on the BPM and has not been added to the BPA patient list, the following warning message appears:



2. Click  to send the selected patient's ID number. If a different patient's ID is already on the BPM, you are prompted to confirm the ID change.



3. Click .
4. If there is data on the device, the program prompts you to confirm overwriting existing data on the BPM.
5. Click ; the ID is changed and data remains on the monitor, linked to the new





Analyzing Patient Profile Data



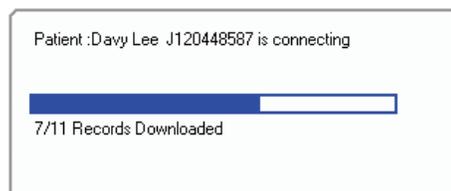
patient ID. Click to change the ID and delete the data on the monitor.

Once a patient ID is sent to the BPM, the patient's profile automatically opens every time you connect to the BPM as long as the ID remains unchanged.

Transferring Patient Data

If the BPM is connected to a computer and the ID stored in the BPM exists in the Patient List, the Data Transfer button  becomes activated allowing patient profile data

to be transferred. Also, the Patient Information screen in the program switches to the same ID. If the ID stored in the BPM doesn't exist in the Patient List, then the button is disabled .



1. Connect the BPM to the computer.
2. Click  to send the patient's profile information. A screen appears showing that the patient's profile is being transferred.



Analyzing Patient Profile Data



Analyzing Data

This section describes the process of analyzing patient data graphically, and explains how to read the statistics window. Click graph view to view the patient profile graphical view screen.

Statistics, Comments, or Period

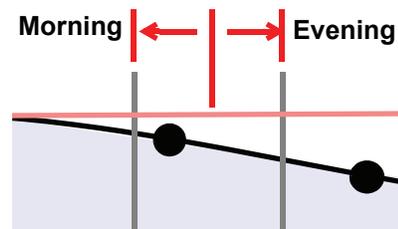
Click to display statistics

Click to type comments

Click for histogram view

Click to transfer data

- Patient data measurements are automatically added to the graph and saved in the patient profile.
- Points indicate the time of day that data was recorded. Points that are on the left, were measured in the morning. Points on the right were measured in the evening.



- Date numbers in bold indicate Saturday and Sunday.
- A yellow region indicates the date when data was transferred.



Analyzing Patient Profile Data



Navigating the Graph Window

Click and to scroll the view up and down. Click and to scroll the view left and right. Alternatively, you can click and drag to change the view.

Click to condense the view. Click to expand the view.

Selecting the Data Display Time Period

These two arrow buttons enable you to select the time span for displaying patient data.

1. Click the arrow next to “from” to select the starting date. A calendar view appears.



2. Click the date that you want to set as the starting point for viewing statistics. Click to view previous months. Click to view following months.

3. Click the arrow next to “to” and select the ending date from the calendar view.

Davy Lee
J120448587

time period

from: 01/02/2003
to: 01/19/2003

- view all readings
- only morning readings
- only evening readings
- compare morning readings with the evening readings

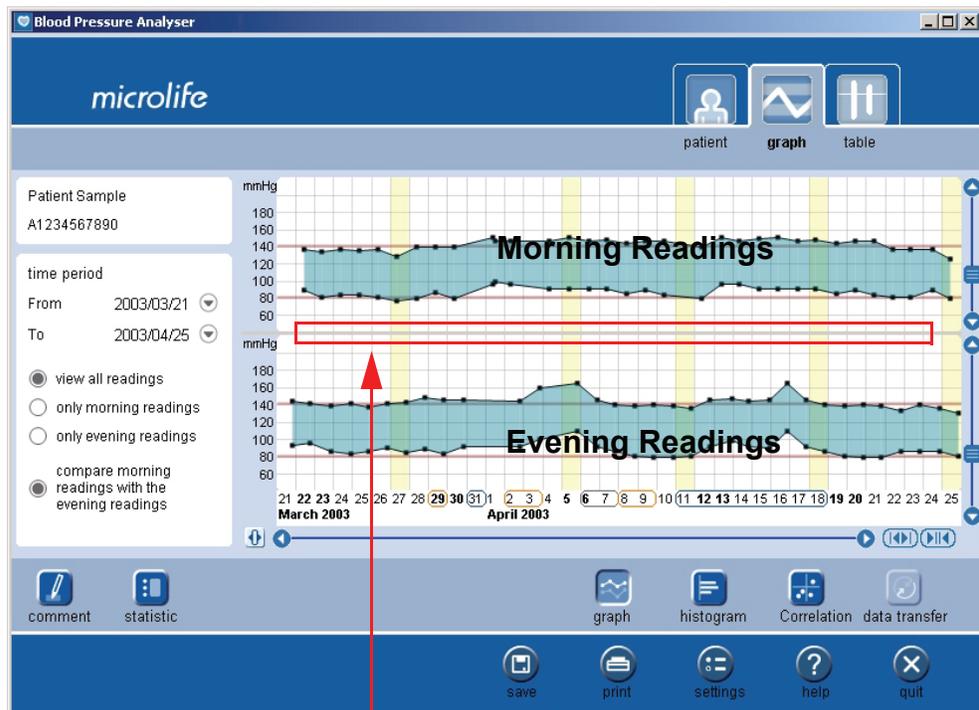


Analyzing Patient Profile Data



Selecting Readings

- View all readings: displays all data stored in the Analyzer program.
- Only morning readings: displays all data collected in the mornings.
- Only evening readings: displays all data collected in the evenings.
- Compare evening readings with morning readings: displays a graph comparing evening readings with morning readings.



Click and drag
this bar up and
down to adjust
the view.

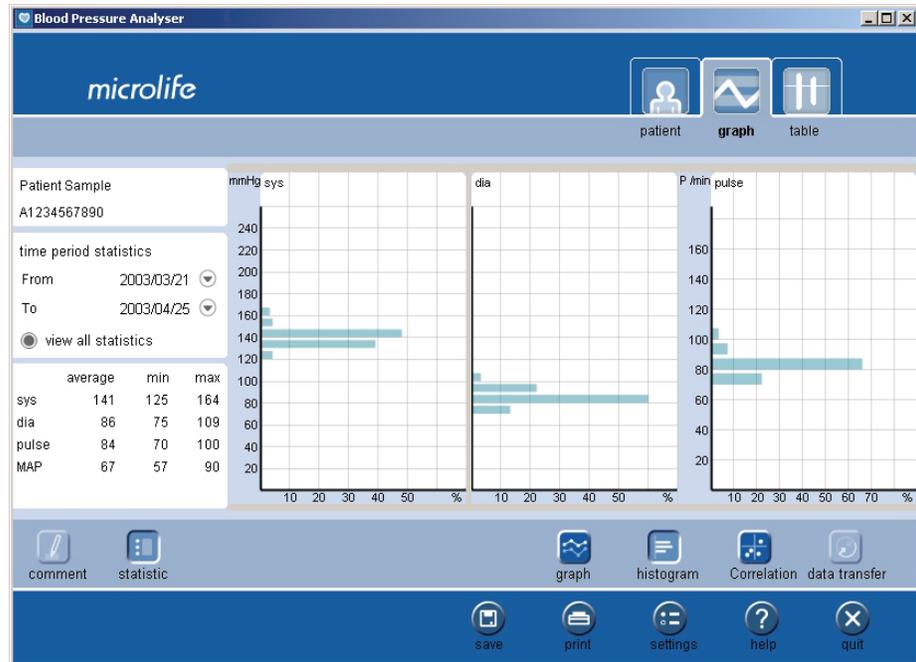


Analyzing Patient Profile Data



Histogram View

Click  to view the patient's data in a histogram format.



Histogram Description

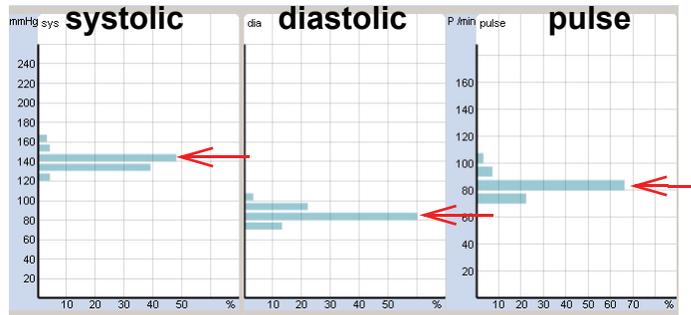
Histogram view provides you with a way to view the percentage of a patient's readings that fall at measured values. Set up the time period (morning, evening, or all readings) to view the measurements for the specified time and view the percentage related to the specified time period.



Analyzing Patient Profile Data

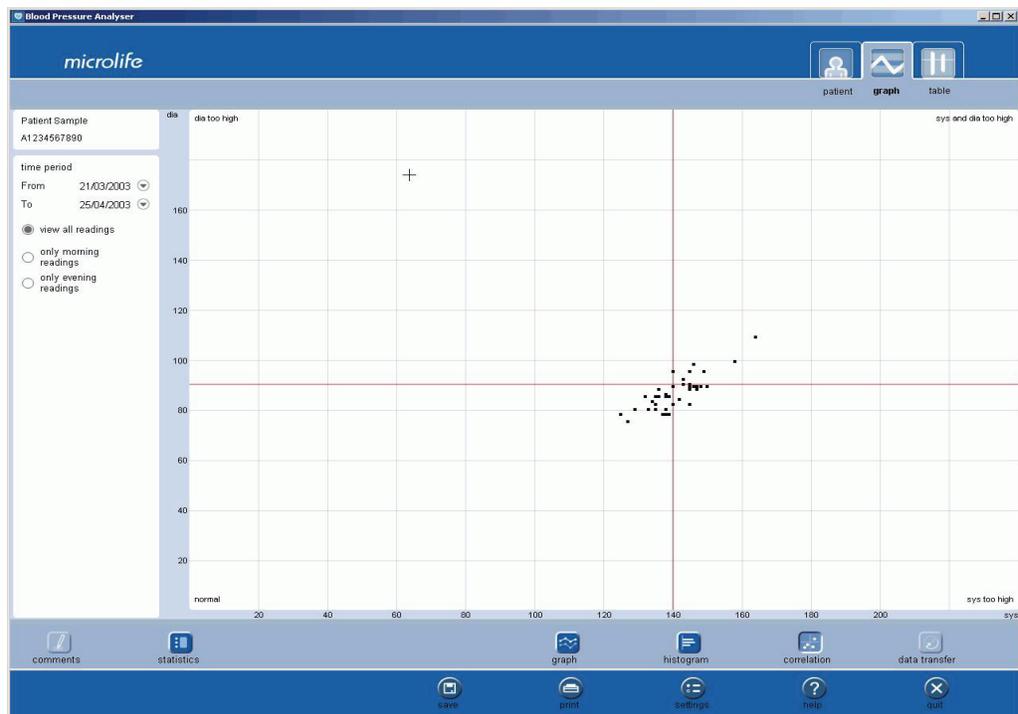


Example: According to the following sample of a patient's readings, approximately 48% of his systolic readings are 140, 60% of his diastolic are 80, and 65% of his pulse readings are 80.



Correlation View

Click  to view the patient's data to view as a correlation graph.



Correlation Description

Correlation view provides you with a way to view the distribution of a patient's readings which fall into four ranges (dia too high, sys and dia too high, sys too high, normal). Set up the time period (morning,



Analyzing Patient Profile Data



evening, or all readings) to view the measurements for the specified time and view how the measures are distributed over the four ranges.

Example: According to the previous sample of a patient's readings, when viewing all readings, most of the readings fall in the normal range. Diastolic measurements always show normal readings. However systolic pressure tends to be high and sometimes both the diastolic and systolic pressure are too high. The measures are distributed in a band form, inclining towards the upper right.

Table Display

BPA 3.1.X provides the statistical information in table format. The program can display all information such as date, time, systolic pressure, diastolic pressure, pulse, etc., for the specified time period in the table, which enables a clear overview and easy management.

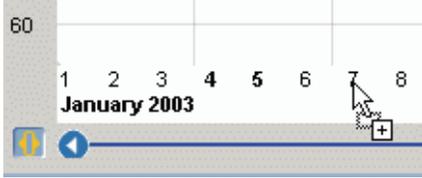
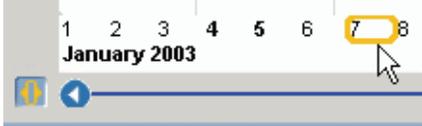
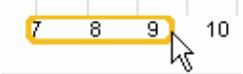
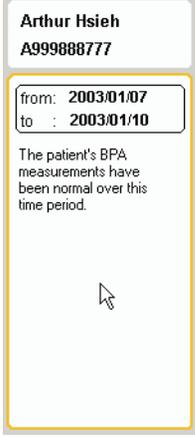
The screenshot shows the 'Blood Pressure Analyser' software interface. The main window displays a table of patient readings for patient sample A1234567890. The table columns are: date, time, mm (marked with a dot), sys (mmHg), dia (mmHg), pulse (P/min), map, and comments. The interface includes a sidebar with filters for 'time period' (From: 21/03/2003, To: 25/04/2003) and 'view all readings', 'only morning readings', 'only evening readings', 'show mm readings', and 'show pad readings'. The bottom of the interface has navigation buttons for 'comments', 'statistics', 'data transfer', 'new', 'print', 'settings', 'help', and 'exit'.

date	time	mm	sys mmHg	dia mmHg	pulse P/min	map	comments
21/03/2003	19:16		143	92	82	75	
22/03/2003	11:21		136	88	72	72	
	17:58		140	95	75	80	
23/03/2003	09:25	•	133	80	86	62	
	20:09		138	85	82	87	
24/03/2003	08:07		135	82	89	84	
	22:37		140	82	78	82	
25/03/2003	08:16	•	134	83	75	86	
	19:58		136	85	85	88	
26/03/2003	08:28		135	80	72	81	
	20:07		140	89	81	72	
27/03/2003	08:13	•	127	75	86	57	
	19:49		142	84	84	64	
28/03/2003	06:09		138	78	86	58	
	19:22		147	88	84	88	
29/03/2003	08:19	•	138	86	75	88	
	19:20		145	82	79	81	
30/03/2003	08:14		139	78	88	57	
	19:21		145	90	81	71	
01/04/2003	09:15	•	149	95	87	77	
	11:20		146	98	79	82	
02/04/2003	07:51		145	95	85	78	
	19:35		143	90	89	72	
03/04/2003	20:19	•	158	99	99	79	
04/04/2003	08:17		145	89	100	70	
05/04/2003	08:39		160	89	98	88	
	18:56		164	109	95	90	
06/04/2003	09:54	•	146	89	89	70	
	20:18		145	90	82	71	
07/04/2003	08:17		147	89	84	89	
	19:23		139	85	86	87	
08/04/2003	09:42	•	142	84	86	84	
	20:19		138	80	81	60	



Setting Comments

Comments enable you to add additional patient-specific information. Follow the instructions below.

<p>1. Click the comments button  and select a color for the comments marker. (Click picture for a movie clip illustration of the procedure.)</p>	
<p>2. Click the comments button  and drag and drop it to a date on the graph view.</p>	
<p>An oval appears encircling the date.</p>	
<p>3. Click and drag either end of the oval until it encircles the days for which the comments are valid.</p>	
<p>4. Type the comments in the comment box. Note that the outline of the box is the same color as the oval created in step 3.</p>	



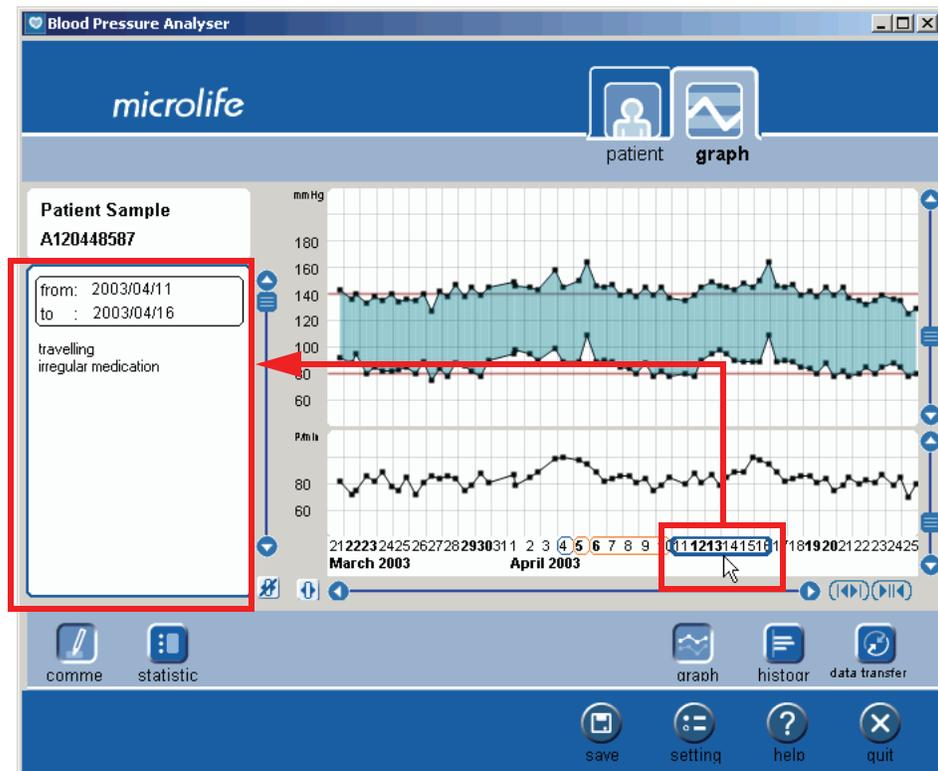
Changing Program Settings



Viewing a Comment

To view a comment:

1. Click  to open the comment pane.
2. Click a comment on the date bar to view the comment associated with that date.



Deleting a Comment

To delete a comment:

1. Select the comment with the cursor.



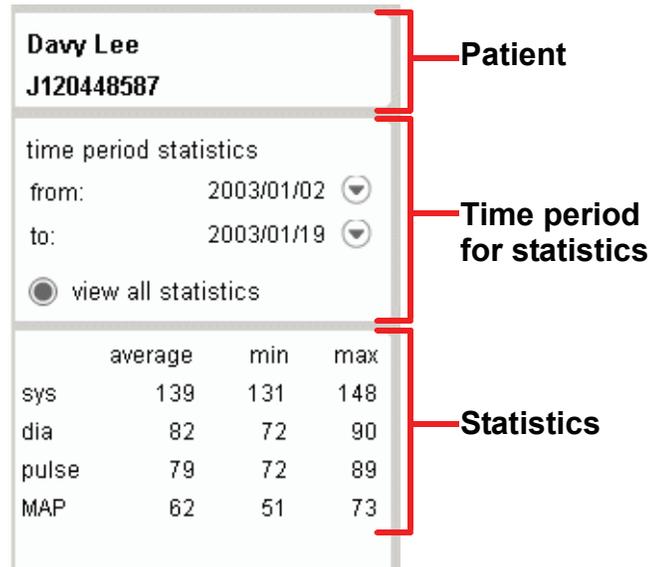
2. Press  to delete the comment.



Displaying Statistics

Statistics view enables you to see patient's data at a glance.

Press  to open statistics view.



Patient

Time period for statistics

Statistics

	average	min	max
sys	139	131	148
dia	82	72	90
pulse	79	72	89
MAP	62	51	73

Selecting a Time Span for Displaying Statistics

Enables you to select the time span for displaying the statistics.

1. Click the radio button next to "View all statistics" to see all data collected on the patient.

2. Click the arrow  next to "From" to select the starting date. A calendar view appears.
3. Click the date that you want to set as the starting point for viewing statistics.



Click  to view previous months.

Click  to view following months.

4. Click the arrow  next to "To" and select the ending date from the calendar view.



Viewing Statistics Data

The statistics view displays the following information:

- **Systolic** – displays the average systolic pressure measured for the chosen time period, and displays the maximum and minimum values.
- **Diastolic** – displays the average diastolic pressure measured for the chosen time period, and displays the maximum and minimum values.
- **Pulse** – displays the average pulse rate measured for the chosen time period, and displays the maximum and minimum values.
- **MAP** – displays the average Mean Arterial Pressure (MAP) for the chosen time period, and displays the maximum and minimum values.
- **PP** – displays the average pulse pressure measured for the chosen time period, and displays the maximum and minimum values.

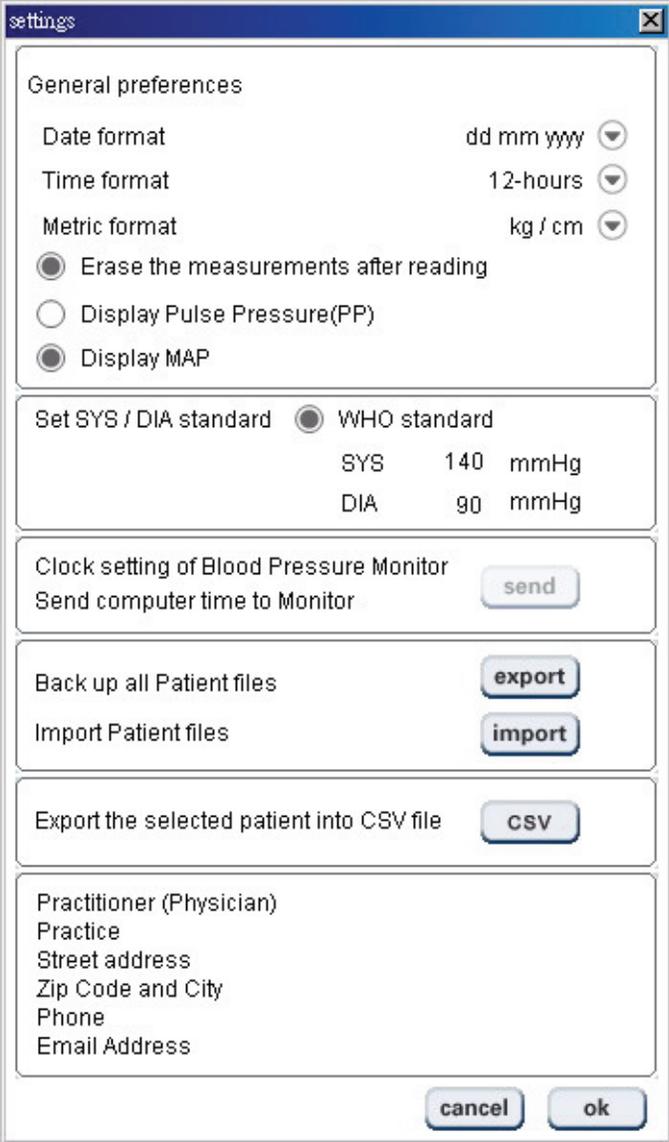
Note: MAP and PP are not displayed at the same time. Choose the one to be displayed in [Settings](#).



About the Settings Screen

The settings screen is used to set general program parameters.

Click  to open the settings screen.



The screenshot shows a window titled "settings" with a close button in the top right corner. The window is divided into several sections:

- General preferences**
 - Date format: dd mm yyyy (dropdown arrow)
 - Time format: 12-hours (dropdown arrow)
 - Metric format: kg / cm (dropdown arrow)
 - Erase the measurements after reading
 - Display Pulse Pressure(PP)
 - Display MAP
- Set SYS / DIA standard** WHO standard
 - SYS: 140 mmHg
 - DIA: 90 mmHg
- Clock setting of Blood Pressure Monitor**
 - Send computer time to Monitor:
- Back up all Patient files**:
- Import Patient files**:
- Export the selected patient into CSV file**:
- Practitioner (Physician)**
 - Practice
 - Street address
 - Zip Code and City
 - Phone
 - Email Address

At the bottom right, there are and buttons.



The following describes each item which can be set.

General Preferences

- **Date format** – enables you to select the format in which the date is displayed: DD.MM.YYYY, MM.DD.YYYY, or YYYY.MM.DD.
- **Time format** – enables you to select the format in which the time is displayed: 12-hour or 24-hour.
- **Metric format** – enables you to select the measurement to use: kilograms per centimeter (kg/cm) or pound per inch (lb./in).
- **Erase the measurements after reading** – click this radio button to enable the program to erase the measurements on the BPM after reading them.
- **Display Pulse Pressure** – click this radio button if you prefer to display pulse pressure (PP) in the [statistics](#) view.
- **Display MAP** – click this radio button if you prefer to mean arterial pressure (MAP) in the [statistics](#) view.

Note: The Blood Pressure Analyzer provides two ways to view information about arterial pressure:

Pulse Pressure (PP) and Mean Arterial Pressure (MAP).
Some doctors prefer to work with PP and others with MAP.

PP is the difference between SYS and DIA
(SYS-DIA=PP for example: 150 - 80=70mmHg).

MAP is not equal to the average of systolic and diastolic.

It is calculated by the formula: $P_{dia} + 1/3P_{pulse}$, where

$$P_{pulse} = P_{sys} - P_{dia}$$

For example, with a $P_{sys} = 130$, $P_{dia} = 80$:

$$MAP = 80 + 1/3(130-80) = 96.7$$



Changing Program Settings



Setting the SYS/DIA Standard

Enables you to set the standard by which systolic and diastolic pressure is gauged.

- **WHO Standard (140/90)** – click the radio button to use the standard set by the World Health Organization — 140 (systolic) and 90 (diastolic)
- **SYS/DIA** – type in a defined standard into the systolic and diastolic fields:

SYS	124	mmHg
DIA	80	mmHg

Setting the BPM Clock

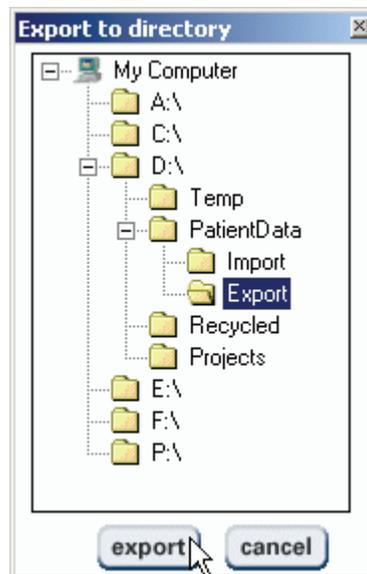
Time and date can be transferred from the computer to the BPM. The program will inform when there's a time difference between the BPM and the computer.

Click to set the BPM time to that of the connected computer.

Exporting Patient Files

Enables you to export (backup) patient files for safekeeping

1. Click to export all patient data to a specified location. You are prompted for the export location.



2. Browse to the directory you want to export the data files to.



Changing Program Settings



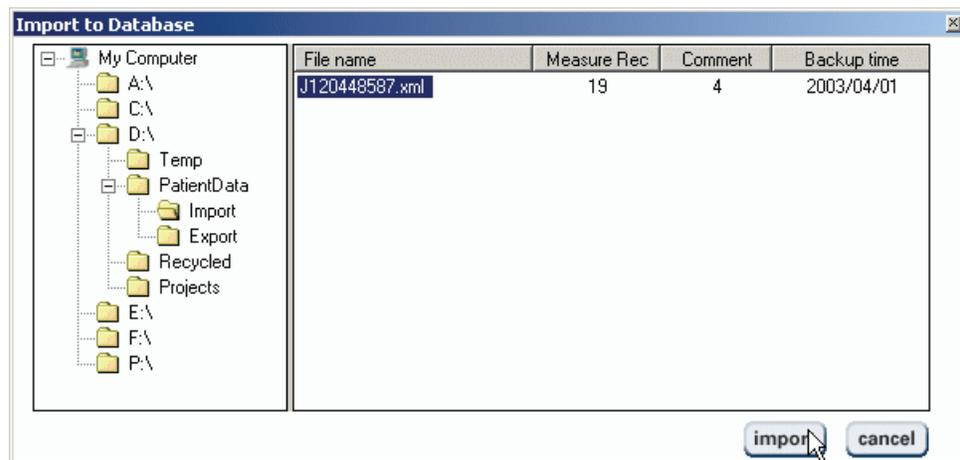
- Click **export** to export the data. The exported data files are saved as XML files and named according to the ID numbers of the patients.



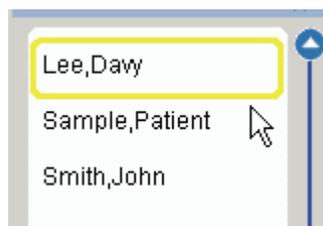
Importing Patient Files

Enables you to import patient files to be added to the BPA program database.

- Click **import** to import files from a specified location. You are prompted for the file location.



- Browse to the location of the file on your computer. Select the file and click **import**. The patient's data is entered into the BPA database and the patient is added to the patient list.





Changing Program Settings



Exporting selected patient profile to CSV

Enables you to export the selected patient's data to a CSV (Comma Separated Values) file.

CSV files can be opened and processed by all statistical programs. Use the following steps to export a patient's data to CSV format:

1. Select a patient from your patient list.
2. The **CSV** button is activated under **Settings** when you select a patient from the patient list. Click the button to start exporting.
3. You will be prompted to specify a name and location for saving your CSV file on your PC hard drive.

Specify the name and location, and click **OK**.

The CSV file gets created and a pop-up window alerts you to this fact. You can then locate the file on your hard drive and use it for analysis.

The screenshot shows a 'settings' window with the following sections:

- General preferences**
 - Date format: dd mm yyyy
 - Time format: 12-hours
 - Metric format: kg / cm
 - Erase the measurements after reading
 - Display Pulse Pressure(PP)
 - Display MAP
- Set SYS / DIA standard** WHO standard
 - SYS: 140 mmHg
 - DIA: 90 mmHg
- Clock setting of Blood Pressure Monitor**
 - Send computer time to Monitor:
- Back up all Patient files**
- Import Patient files**
- Export the selected patient into CSV file** (This button is highlighted with a red box in the original image)
- Practitioner (Physician)**
 - Practice
 - Street address
 - Zip Code and City
 - Phone
 - Email Address

At the bottom of the window are and .



Frequently Asked Questions

Part A Installation, Drivers, and Downloading

Q1 Why won't my unit download despite the fact I have properly created a profile in the software?

- Make sure the unit was connected to the computer by the USB cable before installing the drivers. If not, uninstall the software and repeat the process correctly.
- You may need to reboot your computer before the changes take effect.
- Verify the unit is connected and try plugging the cable into another USB port.
- Make sure the blood pressure monitor has batteries installed properly or is connected to an AC adapter and plugged in.

Q2 Can I connect my BP unit to a USB hub?

We recommend only the use of Active USB Hubs. Connection may fail with passive USB hubs because of unstable power supply.

Q3 Will other devices interfere with my ability to download my BP unit?

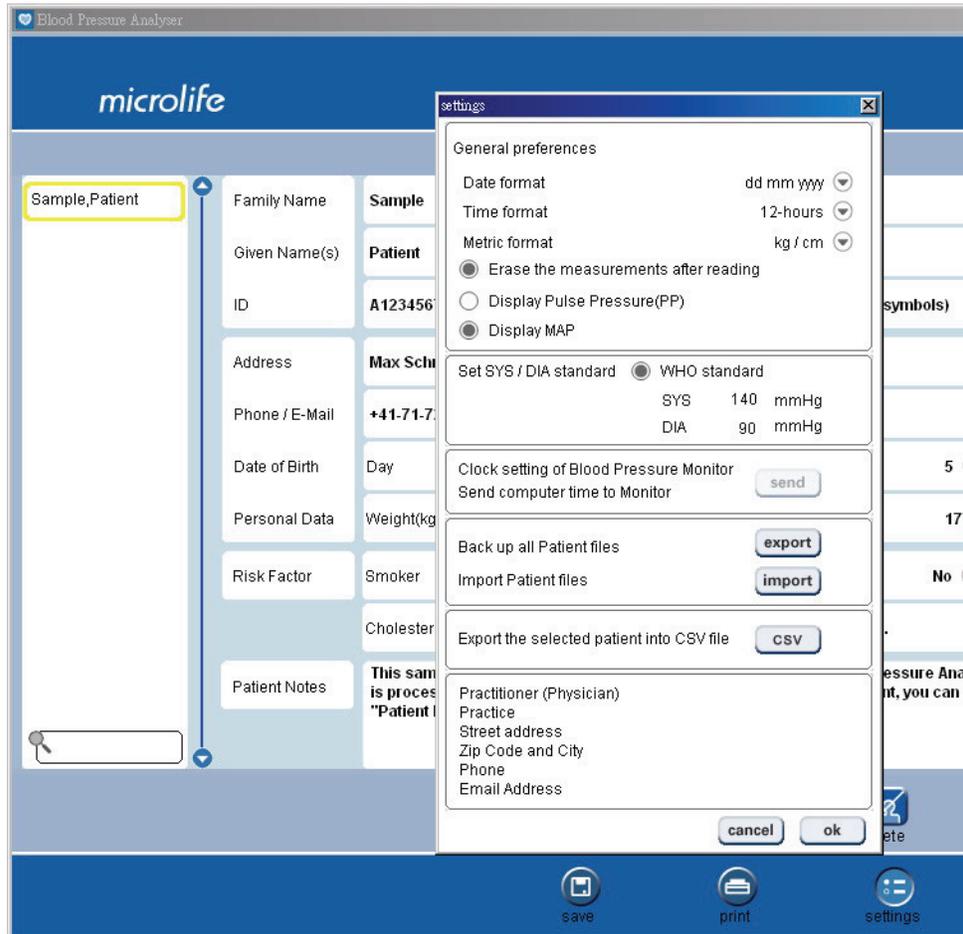
Sometimes, other devices will occupy the virtual-com port used by our device. Our device will not recognize the used virtual-com port and will not communicate. Please DO NOT connect other devices while connecting your blood pressure monitor to the computer.

Q4 I have downloaded my unit once before and now it will not download.

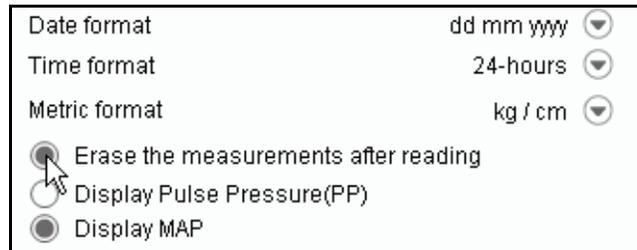
Try to manually reinstall the drivers. Run the HidComInst.exe file under the software USB Driver folder. Make sure that you select the correct patient before attempting to download your measurements.



Q5 I have downloaded my unit but the data is still in the memory.



You may change this preference in the software settings. Click on the Settings button at the bottom of your screen. From within the Settings dialog box, click to select "Erase the measurements after downloading". If the circle is filled the data will be removed from your blood pressure monitor on download. Data can also always be cleared from the monitor by holding down the memory button for 7 seconds until Clr appears on the unit's screen.



- Q6** I have three lines on my blood pressure monitor's display and it won't measure my blood pressure.

The three dashed lines on the screen of your blood pressure monitor indicate that it is connected to the computer via the USB cable. The blood pressure unit in this mode cannot be used to take blood pressure measurements. To take a measurement please disconnect the blood pressure monitor from the computer and use it according to instructions in your owner's manual. Measurements are stored in the blood pressure monitor's memory and can be downloaded at a later time.

- Q7** How can I tell if I have completed the software installation?

The software installation is complete with the installation of the drivers. To confirm, look at Device Manager with the monitor plugged into the PC. Look for PORTS (COM & LPT). Expand to show the ports in detail. See if one of them has the word Cypress associated with any of the COM ports. Seeing Cypress associated with one of the COM ports can confirm installation of the drivers.

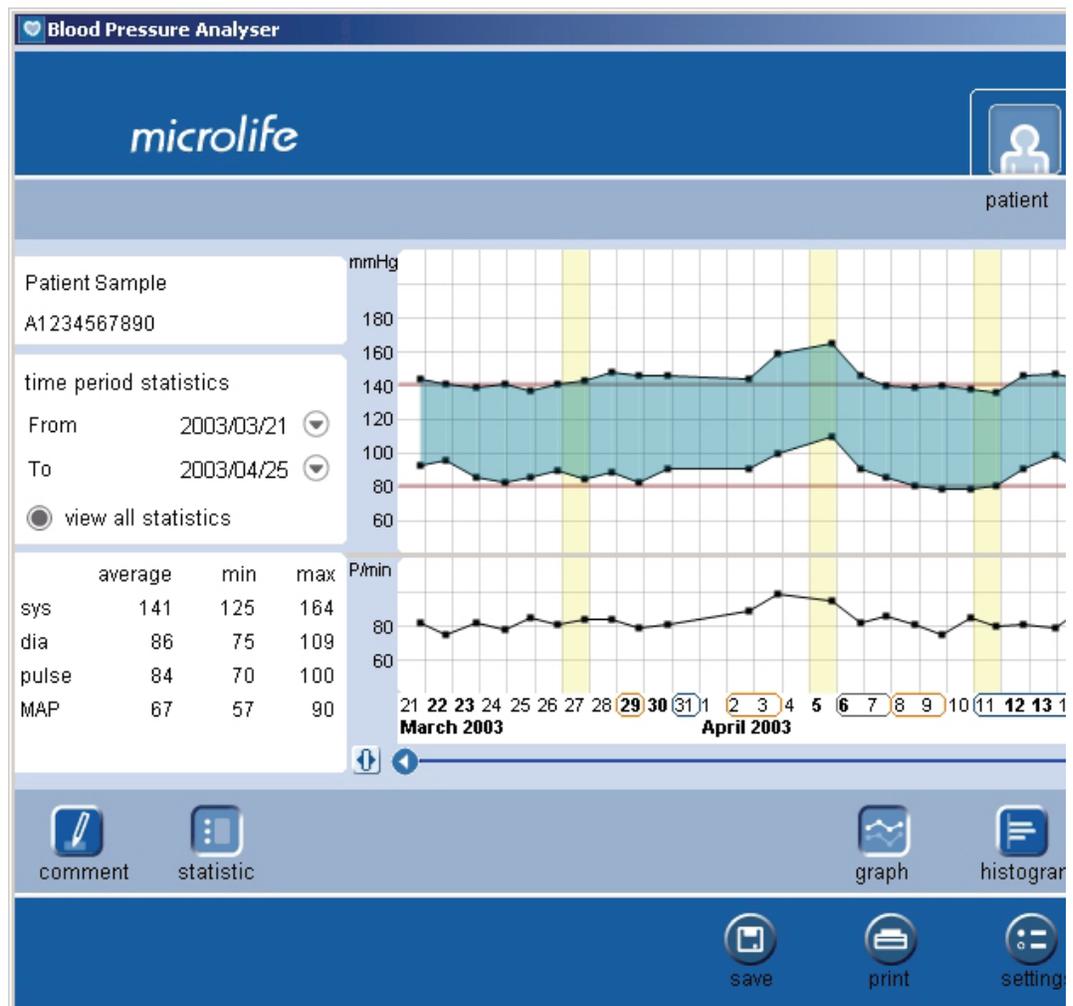


Part B Software Operation

Q1 Can I print all my memories from software with a printer?

Yes. Click the Print button on the bottom of your screen. From the drop down menu, select the type of page to print, then click the print button.

Q2 Do I have to print all my data; can I choose just certain day or just evening and morning values?



At this time there is no way to specify showing morning or evening readings on just specific days. To do this, select the



Graph tab on the top right corner of your screen, adjust the From and To date ranges. Then go back to the Print screen to proceed.

Q3 How many patients can I put in?

There is no limit to the number of patient profiles that you can create in the software. As normally happens in computers, a large database may slow down your PC system.

Q4 Why are there yellow lines on my graphs and in my tables and why are some of them darker than others?

Every time you download the software indicates the date by coloring the date a light yellow. Downloading every day the software colors the days dark yellow on alternating days to separate the different days from one another. In printing out the data the darker yellow highlights may make it difficult to read the data underneath. This can be avoided by not downloading every day. Your blood pressure monitor has enough memory that you only need to download once or twice a week.

Q5 Are any specific files required to run this software?

Our software does require the Microsoft.NET Framework to function. The Software will not run without MSCOREE.DLL installed.

Q6 Is there any specific hardware required by the BPA software?

There is no special hardware required, just a USB port.

Q7 How do I back up my data?

Using the Export and Import functions in the Settings section. You can export all the patient profiles to one of your drives. Each patient will have a XML file. In the event of the problem the files can be imported back into the BPA software.



- Q8** I accidentally download my data to the wrong profile, is there anything I can do to fix it?

Always make sure before downloading data that you select the correct patient. If the "Erase measurements after downloading" preference was selected, data in the blood pressure monitor will be erased. If it was not selected, data is still in the monitor's memory and can be downloaded again, to the correct patient.

- Q9** I am seeing two data points super imposed on top of one another in my graph.

Downloading the same data twice causes this. Please go into Setting and select the "erase measurements after download" option. Or manually clear the data in your blood pressure monitor after every download by pressing and holding the memory button until Clr appears on the screen.

- Q10** How I can reinstall the software without losing the data already transferred in?

You may export all of your data first as XML files. Then, after reinstallation, you can import these XML files back into the software.

- Q11** How does my Microsoft.NET security level affect the BPA software? How do the different Service Packs (1 and 2) influence it?

The default security level in computers is "Full Trusted". If changed to a lower trust level, it may prevent the functioning of the BPA software on XP environment.