

# I. Introduction

The VetSpecs® BP-3 is developed specifically for surgical monitoring and blood pressure screening in cats, dogs, and other similar sized animals. The BP-3 Plus incorporates a VetSpecs® proprietary breakthrough technology for noninvasive blood pressure measurements, called volume plethysmography. The BP-3 Plus also offers a pulse oximeter.

The BP-3 Plus automatically saves monitoring records and BP data on a USB flash drive. Through the USB flash drive, you can easily transfer the saved data to your PC and then integrate the data to your patient database. Compatible with all veterinary practice management software, the BP-3 Plus leads the digital revolution in veterinary blood pressure monitoring and screening.

## II. Installation

### 1. Blood pressure (BP) module and accessories

The BP-3 Plus includes a digital BP module, a BP tube attached to the BP module, two BP sensor bands (one short and one long), and six BP cuffs of different sizes.



BP Module



BP Sensor Bands (set of 2)

Connect the BP module to BP port on the BP-3 Plus. The BP sensor bands are connected to the BP module. The cuffs are connected to the BP tube.

## 2. SpO2 module and sensors



SpO2 Module

The BP-3 Plus also includes a digital SpO2 module, a SpO2 lingual sensor (**gray clip**) labeled “Tongue”, and a SpO2 leg/toe sensor labeled “Leg/Toe/Web”.

Connect the SpO2 module to SpO2 port on the BP-3 Plus. The SpO2 sensors are connected to the SpO2 module.

## 3. USB flash drive and extension cable

The BP-3 Plus comes standard with a USB flash drive and a USB extension cable. Connect the USB flash drive directly or through the USB extension cable to the USB port on the back of the BP-3 Plus.



A USB flash drive (included)



The USB flash drive plugged into the BP-3 Plus

## 4. Connecting the power cord

Plug the power cord into the power port on the back of the BP-3 Plus, and the other end of the power cord into a standard 3-line 110V/60Hz power outlet in North America, or a standard 3-line 220V/50Hz power outlet in most other countries. For maximum safety, do not use a power outlet without the ground line (having only two lines in the power outlet).

# III. Clinical instructions

## 3.1 Blood pressure monitoring

### 1. The concept

Blood pressure (BP) is the lateral force per unit area exerted on a vessel wall. The pressure generated is pulsatile and creates a wave of vascular distention. This forward-moving pressure wave has maximum (systolic arterial pressure) and minimum (diastolic arterial pressure) values oscillating around a mean value (mean arterial pressure), which is the average pressure throughout the cardiac cycle that pushes blood through the vascular network. Since systole is normally shorter than diastole, mean arterial pressure (MAP) is not simply the midpoint between systolic arterial pressure (SAP) and diastolic arterial pressure (DAP) but is estimated as  $MAP = DAP + (SAP - DAP) \div 3$

The BP-3 Plus incorporates a breakthrough technology for noninvasive BP measurements, called pressure plethysmography. This technology employs an inflatable cuff to occlude arterial flow and a pressure sensor band to sense arterial pulsations. Pressure plethysmography has been proven to provide accurate systolic, diastolic, and mean arterial pressures, and a real-time pulse rate in cats and dogs of all sizes, and other similar sized animals.

### 2. Choose an appropriately sized cuff and sensor band

Cuff size can have a significant influence on the accuracy of a measurement. A cuff that is too narrow will produce artificially elevated readings, while a cuff that is too wide will produce spuriously low values. In theory, cuff width should be equal to 35 - 40% of the circumference of the cuff site.

The BP-3 Plus comes with six cuffs of different sizes. All six cuffs are marked to aid in proper cuff selection. When a cuff is wrapped around a site, its index edge should be within the range indicated on the cuff. The cuff is too small or too large if the index edge is outside the range. The following should be used only as general guidelines for cuff selections, because the circumference of the site, not the size of the animal, is the deciding factor for cuff selections.

- Size 1 (circumference 4.3 – 6.4 cm) is for kittens and small dogs.
- Size 2 (circumference 5.9 – 8.7 cm) is for kittens, cats, and small dogs.
- Size 3 (circumference 7.2 – 10.7 cm) is for cats and small dogs.
- Size 4 (circumference 8.5 – 12.7 cm) is for small to medium dogs.
- Size 5 (circumference 9.0-15.0 cm) is for medium to large dogs.
- Size 6 (circumference 15.0-21.5 cm) is for large dogs.

The BP-3 Plus comes with two long sensor bands and two short sensor bands. **A sensor band to be used must allow it to be wrapped tightly around the sensor site. Otherwise, the sensor band is too large for the sensor site, which will not be able to work properly.** Generally speaking, the long sensor bands are for medium and large dogs, and the short sensor bands are for cats and small dogs.

### 3. Apply the cuff and sensor band

**Apply the cuff and the sensor band on the same limb or the tail. It is not necessary to clip the hair. Apply the cuff, and then the sensor band. The sensor band must be placed distal to (below) the cuff. Place the sensor band over a main artery with the VetSpecs® side facing out, and pull the Velcro strip to wrap the sensor band tight. The sensitivity of the sensor band is reduced significantly when the sensor band is not wrapped firmly enough or not positioned correctly. If the long sensor band is too long to be wrapped tightly around the site, use the short sensor band instead.**

In order for the cuff to successfully occlude the arterial flow when inflated, the cuff must be placed at an appropriate site, as instructed below.

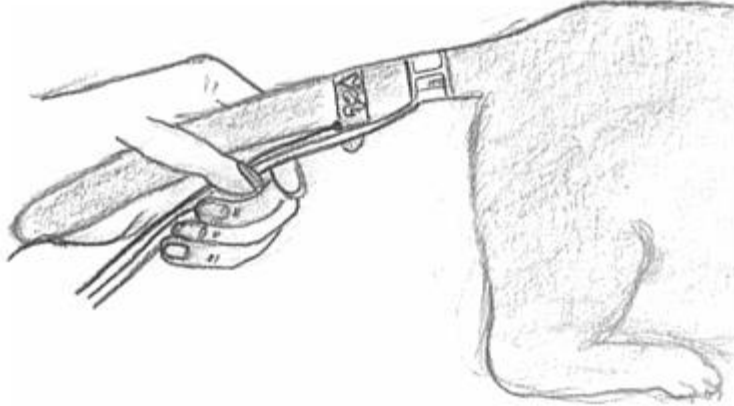
- Place the cuff at the base of the tail and the sensor band half of an inch below the cuff. Position the sensor band over the median coccygeal artery, see sketch 1. Pull the Velcro strip to wrap the sensor band tight.

**The tail placement is highly recommended for patients with short legs and conscious patients, especially cats. Cats tolerate much better the tail placement.**

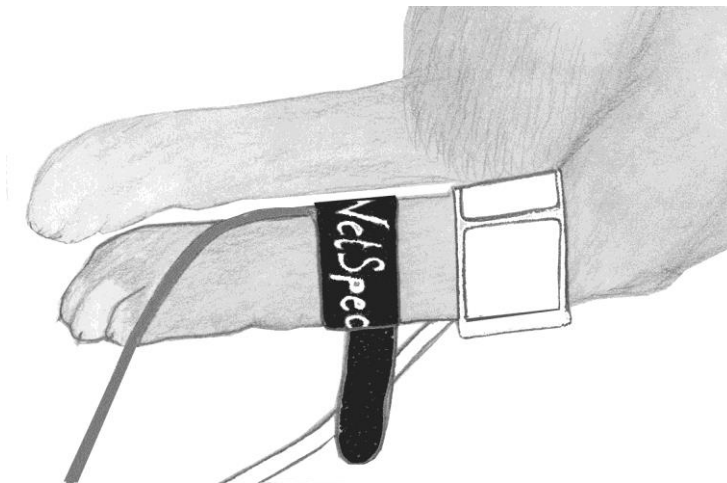
- For cats or dogs with long legs, the cuff may be placed below the hock and the sensor band half of an inch distal to the cuff. **Do not place the cuff above the hock. The rear leg placement may not be suitable for patients with short legs.**

- Place the cuff and the sensor band between the elbow and the carpus with the sensor band about 1" distal to the cuff, see sketch 2. Lay the patient in lateral recumbence to minimize the effect of gravity. **Conscious cats usually do not tolerate well the foreleg placement.**

Do not place the cuff on or above the hock or elbow. The cuff will not be able to occlude the arterial flow if placed too high on a limb.



Sketch 1: Place the cuff at the base of the tail and the sensor band half of an inch below the cuff.



Sketch 2: Place the cuff and the sensor band between the elbow and the carpus with the sensor band 1" distal to the cuff.

## 4. Watch the waveform

The arterial pulsations registered by the sensor band are displayed as pulse waveforms (blue).

After applying the cuff and the sensor band, watch the blue pulse waveforms. The waveforms pulsate in synch with the heartbeats when the sensor band is registering valid arterial pulsations. If the waveforms are erratically, the sensor band is picking up motions, rather than valid arterial pulsations.

When the BP module registers no signals, the BP-3 Plus will flash CHECK BP SENSOR, indicating one of the three situations: (a) no sensor band is connected to the BP module; (b) the sensor band is not applied to the patient, for example, the sensor band is lying on the table; and (c) the sensor band was broken inside. **If “CHECK BP SENSOR” is displayed while a sensor band is connected to the BP module and placed on the patient, tap the sensor band with your finger. If “CHECK BP SENSOR” does not go away, the sensor band is no longer working, and needs to be replaced.**

In order to perform BP measurements, a valid pulse rate has to be registered first. The BP-3 Plus will display WAIT... until a valid pulse rate is registered, which is displayed in blue. If the sensor band is picking up valid arterial pulsations, and no continuous motions are induced onto the patient, a valid pulse rate will be displayed in a few seconds, and at the same time, READY will be displayed, indicating the BP-3 Plus is ready for BP measurements. No BP measurements can be started before READY is displayed.

## 5. Start a measurement

BP measurements can be started manually at the touch of a button, or automatically at a user-set interval. The default measurement interval setting is 3 minutes. To manually start a measurement, push START/STOP key while READY is displayed.

The BP-3 Plus rapidly inflates the cuff to around 280 mmHg, and then deflates gradually. The real-time cuff pressure count down is displayed. The deflation process takes only a few seconds. The waveforms will resume when the pressure inside the cuff equals the systolic arterial pressure, indicating the return of arterial flow. Upon completing the measurement, systolic arterial pressure (SAP), diastolic arterial pressure (DAP), and mean arterial pressure (MAP) are displayed.

Between measurements, if motions are induced to the patient, the BP-3 Plus may display WAIT... until the sensor band is again picking up valid arterial pulsations. If pushing START/STOP key while WAIT... is still displayed, a measurement will not be started right away, instead it will be started as soon as READY is again displayed. To abort a measurement, push START/STOP key.

**The waveforms should go a flat line immediately after the cuff inflation, indicating an occlusion of the arterial flow.** If the waveforms keep pulsating immediately after the cuff inflation, indicating a failure to occlude the arterial flow, no BP readings will be registered for the measurement, and CHECK BP CUFF will be flashing on the screen. If you see CHECK BP CUFF is displayed, verify the cuff placement and size. Make sure that (a) the cuff is applied correctly, (b) the cuff is placed at an appropriate site, and (c) the cuff size is appropriate for the site. The BP-3 Plus will keep flashing CHECK BP CUFF until READY is displayed again. **It is highly recommended to manually start the first measurement and watch the measurement process closely.** Set the BP-3 Plus to automatically perform BP measurements only after you have confirmed that the cuff can successfully occlude the arterial flow.

## Troubleshooting

**Problem:** The waveforms are erratic even when there are no motions.

**Possible causes and corrective actions:**

The sensor band may not be working properly.

Test the sensor band on your finger. For the short sensor band, wrap it firmly on your index or middle finger. For the long sensor band, wrap it firmly on both your index and middle fingers together. If the waveforms are erratic, the sensor band needs to be replaced. If the waveforms pulsate vigorously and in synch with your heartbeats, the sensor band is good. Try it again on the patient.

**Problem:** CHECK BP CUFF is displayed.

**Possible causes and corrective actions:**

- The cuff was applied to an incorrect site and/or too small for the site. The cuff could not occlude the flow.

Use an appropriately sized cuff, place it at a correct site, and wrap the cuff correctly. Watch the waveforms. It should go a flat line immediately after the cuff inflation.

- The cuff and the sensor band were placed incorrectly.

The cuff and the sensor band must be placed on the same limb or the tail with the sensor band distal to the cuff.

- The patient is having repetitive body motions, such as panting or trembling.

Do not perform measurements in patients that are trembling or panting.

**Problem:** The BP-3 Plus keeps inflating the cuff.

**Possible causes and corrective actions:**

There is a leakage on the cuff or inside the BP module.

Try different cuffs. If the problem exists with different cuffs, there may be a leakage inside the BP module.



## **3.2 Pulse oximetry**

### **A. The concept**

Pulse oximetry provides a noninvasive and continuous estimate of oxygen saturation of hemoglobin in arterial blood. "SpO<sub>2</sub>" is commonly used when referring to oxygen saturation readings obtained from a pulse oximeter. Pulse oximetry combines the principles of photoelectric plethysmography and spectrophotometry to determine arterial hemoglobin oxygen saturation values. Photoelectric plethysmography uses light absorption technology to reproduce waveforms produced by pulsatile arterial flow. The changes in the absorption of light due to arterial pulsation are reproduced as pulse waveforms. Spectrophotometry is the technology that uses various wavelengths of light to perform quantitative measurements of light absorption through given substances.

Pulse oximeters utilize two light-emitting diodes (LEDs) of given wavelengths: a red light at approximately 660 nm and an infrared light at approximately 920 nm. A photo-detector, placed opposite to these LEDs, across an arterial vascular bed, measures the intensity of transmitted light across the vascular bed. The difference in the intensity of transmitted light at each wavelength is caused by the difference in the absorption of light by oxygenated and deoxygenated hemoglobin species contained within the vascular bed. The determination of arterial hemoglobin oxygen saturation is computed from the relative amounts of light transmitted to the photo-detector.

### **B. Connecting the SpO<sub>2</sub> module**

Connect the SpO<sub>2</sub> module to the SPO<sub>2</sub> port on the BP-3 Plus. "MODULE OFF" is indicated when the SpO<sub>2</sub> module is not connected to the BP-3 Plus. Connect a SpO<sub>2</sub> sensor to the SpO<sub>2</sub> module. Attach the SpO<sub>2</sub> module onto the surgical table to prevent the weight of the module from being applied to the SpO<sub>2</sub> sensor.

### **C. Applying a SpO<sub>2</sub> sensor**

#### **1. Lingual sensor (GRAY clip)**

The lingual sensor labeled "Tongue" is intended for use only on the tongue, not at anywhere else. Place it at the center of the tongue, with the light-emitting side on top of the tongue.

## 2. Leg/toe sensor

The leg/toe sensor labeled “Leg/Toe/Web” is intended for use in dental procedures or surgical procedures which produce repetitive motions to the head of the patient.

In cats, the leg/toe sensor can be placed on

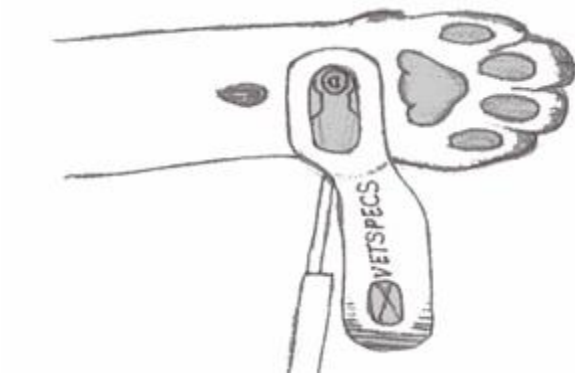
- The distal leg between the carpal pad and the metacarpal pad, with the light going through the leg from front to back, see sketch 3. If the sensor site is covered with dark hair and/or pigmented tissue, the hair on both sides must be clipped.
- A paw top to bottom with the light-emitting side on top of the paw and the other side on top of the metacarpal pad, see sketch 4. If the sensor site is covered with dark hair and/or pigmented tissue, the hair on top of the paw must be clipped.

In dogs, the leg/toe sensor can be placed on

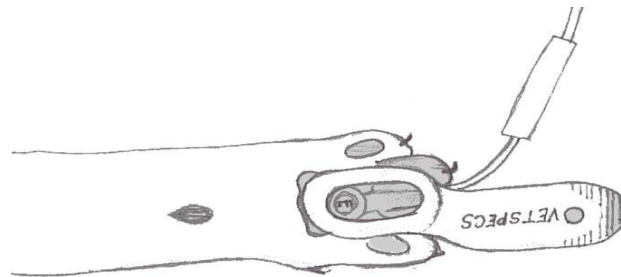
- The Achilles tendon, see Sketch 5. If the sensor site is covered with dark hair and/or pigmented tissue, the hair on both sides must be clipped.
- A toe side to side, see sketch 6. Apply the sensor to a toe with light skin if possible. If the toe is covered with dark hair and/or pigmented tissue, the hair on both sides must be clipped.
- The distal leg front to back between the carpal pad and the metacarpal pad if the sensor clip can fit, see sketch 3.

For lizards, place the lingual sensor on the tongue. For birds, place the leg/toe sensor on the upper leg.

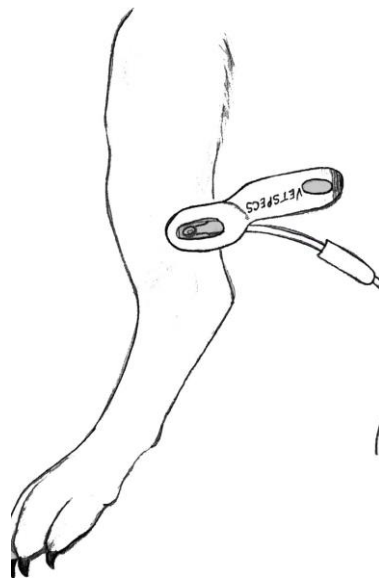
**Do not place the leg/toe sensor, which features a strong spring, on the tongue. Applying the leg/toe sensor to the tongue will cause vasoconstriction, resulting in inaccurate readings.**



Sketch 3: The Leg/toe sensor on a distal leg of cats or small dogs.



Sketch 4: The leg/toe sensor on a paw of cats.



Sketch 5: The leg/toe sensor on the Achilles tendon of dogs.



Sketch 6: The leg/toe sensor on a toe of dogs.

### **C. Watch the pulse waveforms**

After the sensor has been placed on the patient for a few seconds, the pulse waveform will start to pulsate, and then a SpO<sub>2</sub> reading will be displayed.

**The pulse waveforms are pulsating in synch with the heartbeats when the sensor is picking up valid arterial pulsations. The SpO<sub>2</sub> reading is accurate only when the pulse waveforms are pulsating in synch with the heartbeats.**

After applying the lingual sensor, if the pulse waveforms are erratic, the tissue underneath may be in a low perfusion condition. Verify the patient status. If the patient condition is normal, try another site on the tongue.

If the pulse waveforms turn erratic during surgery, verify the patient status immediately. If the patient condition is normal, move the sensor to another spot on the tongue. After the sensor has been placed on one spot for an extended period of time, the effect of the pressure could build up to cause vasoconstriction in the tissue.

To apply the leg/toe sensor to a site with pigmented tissue, the hair at the site (on both sides) must be clipped. Watch the pulse waveforms. If they are a flat line or pulsating intermittently, the site is too pigmented to permit adequate light transmission. Try another site. If possible, place the sensor at a site with light skin.

## Troubleshooting

**Problem:** “PROBE OFF” is displayed while a SpO2 sensor is connected to the SpO2 module.

**Possible causes and corrective actions:**

A wire inside the sensor was broken.

The sensor needs to be replaced.

**Problem:** After applying the leg/toe sensor, the pulse waveforms are erratic or just a flat line.

**Possible causes and corrective actions:**

- The sensor was applied incorrectly.  
Check the sensor placement. Place the sensor at one of the sites illustrated above.
- No adequate light transmission due to dark hair and/or pigmented skin.  
Clip the hair on both sides, or if possible, move to a site with light skin.

**Problem:** After applying the lingual sensor, the pulse waveforms are erratic.

**Possible causes and corrective actions:**

- Low perfusion at the sensor site.  
Check the patient status.
- The sensor is malfunctioning.  
Try the sensor on your finger. If the sensor picks up valid arterial pulsations, try it again on the patient. If the sensor can not pick up valid arterial pulsations on your finger, the sensor needs to be replaced.

## 3.3 Blood pressure screening

See pages 3 - 8 for more instructions.

### 1. Screening for hypertension

Screening for hypertension must be performed in a quiet environment under a stress-free condition. If possible, have two people to do the job. One holds and calms the patient while the other places the cuff and the sensor band and operates the BP-3 Plus.

**It is recommended to place the cuff and the sensor band on the tail. See sketch 1 on page 5. Cats usually tolerate much better the tail placement.**

Apply the cuff first, and the sensor band, and then calm down the patient. After the patient is calmed down, connect the cuff and the sensor band to the BP module.

The patient must be calmed down before starting a measurement. Do not start a measurement when the patient is constantly struggling, panting, trembling, or shivering. No technologies can measure BP effectively when there are repetitive motions on the patient. Furthermore, it makes no sense to measure BP when the patient is obviously under stress.

Watch the bar graph. If it is pulsating erratically, i.e. seems not in synch with the heartbeats, the patient is not relaxed. Even when there are no visible body motions, the muscles underneath the sensor band may still be too tense, producing minute muscle movements. Continue to calm the patient. After the patient is calmed down, the bar graph will pulsate in synch with the heartbeats, indicating that the sensor band is picking up valid arterial pulsations. As soon as READY is displayed, you can push START/STOP key to start a measurement.

For BP screening in conscious patients, it is recommended to set the measurement interval at 0.5 or 1 minutes, or to manually start each measurement.

## **2. Systemic hypertension**

The diagnosis of systemic hypertension may be made in a cat of any age with a systolic pressure over 190 mmHg. Cats with clinical findings compatible with hypertension and systolic pressures between 160–190 mmHg should also be considered hypertensive, particular in cats < 14 years old. In the absence of clinical findings of hypertension, cats with a systolic pressure between 160 – 190 mmHg should have measurements repeated many times over the course of a day. In general, dogs with a systolic pressure over 180 mmHg are considered hypertensive. Care has to be taken in diagnosing hypertension as marked breed differences occur.

These are not absolute limits, just a guideline for each individual case. Repeated measurement helps clarify whether the elevation in pressure is sustained or stress-induced. Results always need to be interpreted carefully in light of the animal's condition and measurement environment. If the same patient is to be measured at different times, cuff size and position should be matched as close as possible.

## **3. BP measurements in hypotensive patients**

In order for the sensor band to pick up valid arterial pulsations in hypotensive patients, place the sensor band at a site with better circulation, position the sensor band right above a main artery, and wrap the sensor band tight. If necessary, clip the hair underneath the sensor band. If the sensor band cannot pick up valid arterial pulsations, try another location. The sensor band may not be able to pick up valid arterial pulsations when the circulation underneath is too weak. Failure to pick up arterial pulsations by the sensor band at multiple locations is a strong indication of severe hypotension.

# IV. Operational instructions

Push the POWER switch on the back to turn on or off the BP-3 Plus.

Turning on the power while pushing and holding MENU key makes the BP-3 Plus enter into its demo mode, in which all information displayed on the screen is generated from internal computer, not from the patient. **Do not turn on the power while push and hold MENU key.**

## 4.1 Control panel

### MENU

Push MENU key to display main menu, enter submenus, or change settings in submenus.



Push ↑ or ↓ key to select items, input numbers, or change the volume of the speaker.

### TREND

Push the TREND key to display BP data table, and PR and SpO2 trends. Push ↑ or ↓ key to change pages for BP data table or trends.

### FREEZE

Push the FREEZE key to save data on the USB flash drive.

### SOUND

Push the SOUND key to turn off or on the heartbeat sound.

### START/STOP

Push the START/STOP key to manually start or stop a BP measurement.



## 4.2 Menu system

### Main Menu

Push MENU key to display main menu as below.

SPEED: 50

NIBP

PR

SPO2

SETUP

ESC

### SPEED: 50

The BP-3 Plus features two waveform speeds, 50 (default) and 25 mm/s. To change waveform speed,

- Select 50, push MENU key to change to 25,
- Push ↑ or ↓ key to select ESC, and then push MENU key to exit.

### NIBP

In main menu, push ↑ or ↓ key to select NIBP, and then push MENU key to display the NIBP submenu as below.

INT.            3min

ALM:           ON

SHI:           180

LO:            060

DHI:           120

LO:            040

MHI:           150

LO:            050

ESC

## A. INT

To change the interval setting for automatic BP measurements (default 3 minutes),

- Select 3 min, and then push MENU key to highlight in red.
- Push ↑ or ↓ key to change the setting, and then push MENU to set.

## B. ALARM

The default setting for BP alarm is ON.

To turn off BP alarm, select Alarm: ON, and push MENU key to change to OFF.

## C. CHANGE BP ALARM LIMITS

- Push ↑ or ↓ key to select an item
- Push MENU key to highlight it
- Push ↑ or ↓ key to change the number
- Push MENU key to set

## PR

In main menu, push ↑ or ↓ key to select PR, and then push MENU key to display the PR submenu as below.

HI:           400  
LO:           050  
ALM:         ON  
SOUND:       ON  
ESC

To change any setting, follow the same steps as above.

## **SPO2**

In the main menu, push ↑ or ↓ key to select SPO2, and then push MENU key to display the SPO2 submenu as below:

HI: 100  
LO: 090  
ALM: ON  
ESC

To change any setting, follow the same steps as above.

## **SETUP**

In the main menu, push ↑ or ↓ key to select SETUP, and then push MENU key to display the SETUP submenu as below:

HOUR:  
MIN:  
SEC:  
MON:  
DAY:  
YEAR:  
ESC

To change any setting, follow the same steps as above.

## 4.3 Save information

### 1. Connecting the USB flash drive

Plug the USB flash drive to the USB port on the back of the BP-3 Plus. In seconds, “DISK READY” will be indicated on the screen. “NO DISK” is indicated when the USB flash drive is not plugged in.

Each time the USB flash drive is plugged in, or the BP-3 Plus is powered on while the USB flash drive is plugged in, a new folder will automatically be created on the USB flash drive. The new folder will be named PET01, PET02, PET03 ..... as shown below.



Each time the USB flash drive is plugged in, the BP data and trends stored in the internal memory of the BP-3 Plus will be automatically erased, making it ready for the new patient.

### 2. Save the data

The BP-3 Plus automatically saves all registered BP readings on the USB flash drive. Upon completing a BP measurement, the BP-3 Plus will save the registered BP readings on the USB flash drive.

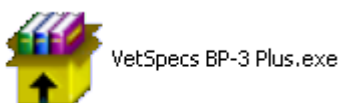
Any time during a monitoring, you can save information on the screen (screen capture) by pushing the FREEZE key.

## 4.4 Transfer data to your PC

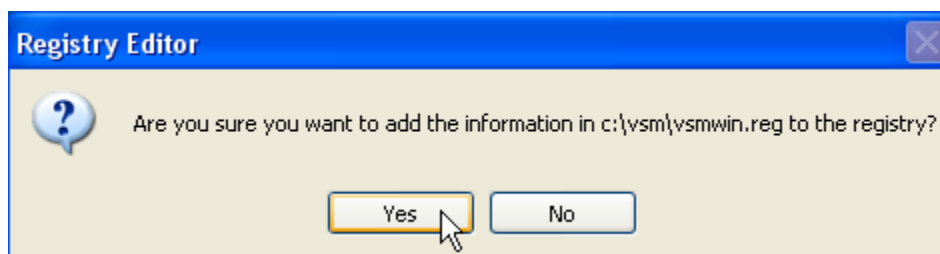
### 1. Install the software to your PC

The BP-3 Plus data management software is compatible with any PCs using a Windows® operating system.

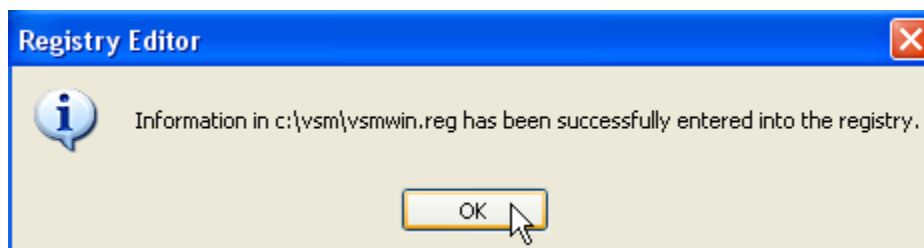
Insert the software CD into a CD drive on the PC, and then open the CD. You will see one file named “VetSpecs BP-3 Plus.EXE”. To install the program on the PC, simply double click the file.



The window below pops up. Click Yes button.



The window below pops up. Click OK button.

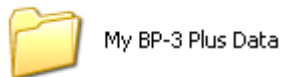


An icon named “BP3PLUS” appears on the desktop of the PC, as shown below:



## 2. Create a master folder on the hard drive

It is suggested to establish a new folder on the hard drive to be the master folder for storing all patient data recorded by the BP-3 Plus before you transfer any data to the PC. You can give any name to the master folder. For example, you can name it “My BP-3 Plus Data”.



## 3. Transfer data to the hard drive

Remove the USB flash drive from the BP-3 Plus, and insert it to a USB port on the PC. The USB flash drive should be recognized by the PC automatically, and indicated as Removable Disk under My Computer.

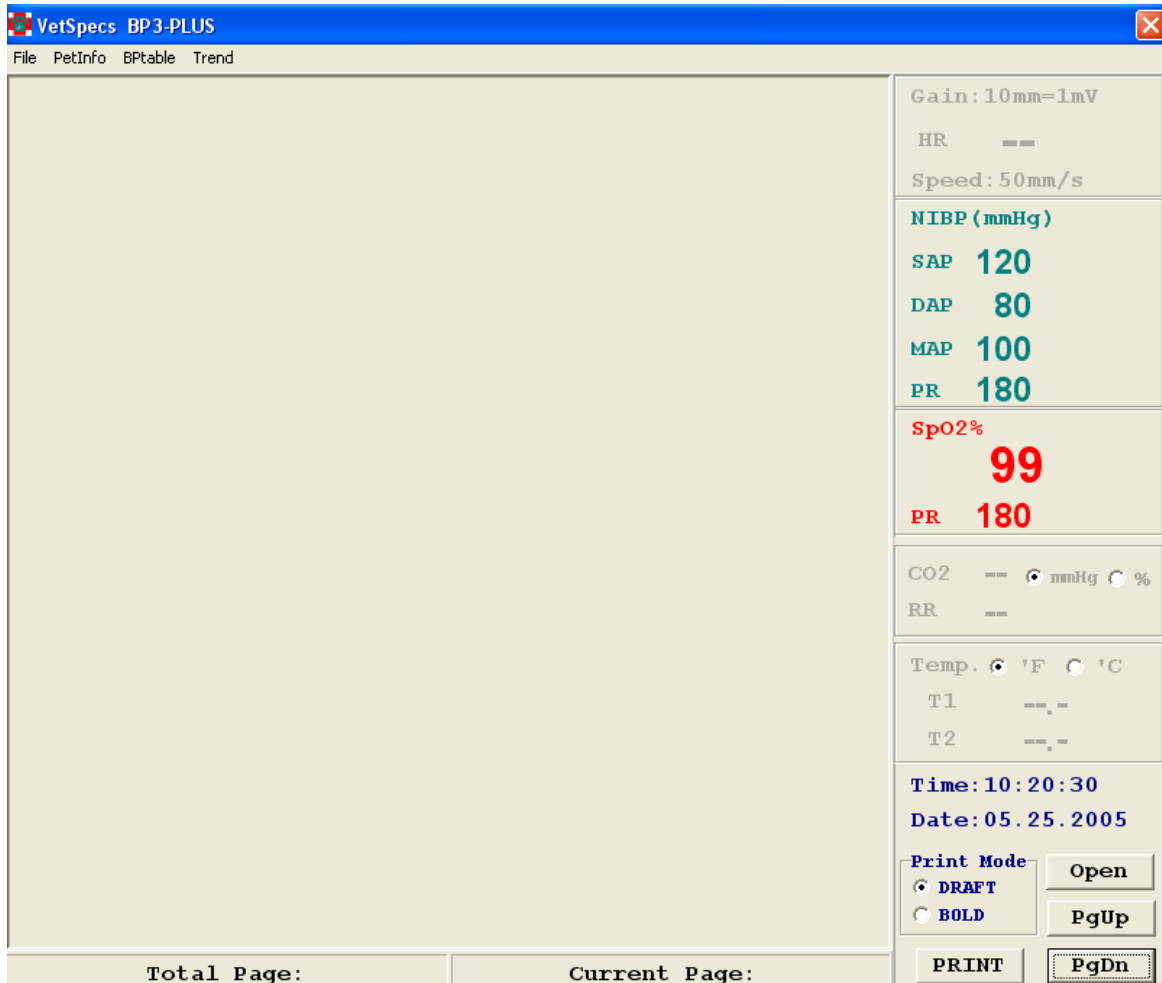
**It is highly recommended that you copy all folders on the USB flash drive to the master folder or a folder inside the master folder in the same day they were recorded, and then delete all folders on the USB flash drive.**

**You must rename all these folders immediately after they are copied to the hard drive, and you should rename them in a way that they can be identified easily. For example, you may rename a patient's folder with the patient ID number or patient ID + name.**

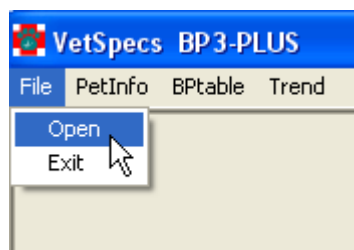
## 4.5 Review and print

### 1. Open the program from the desktop

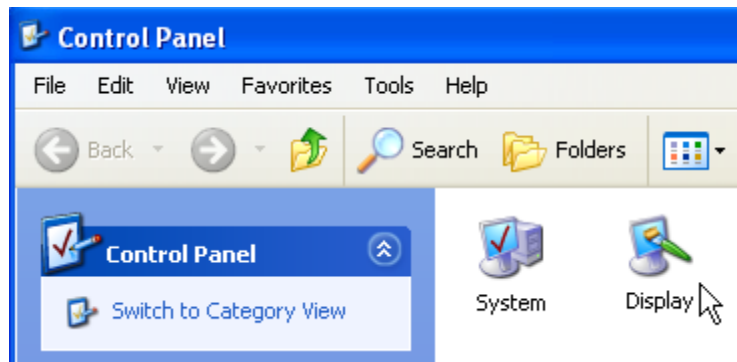
Double click the icon “BP3PLUS” on the desktop to open the program. A window titled VetSpecs BP-3 PLUS pops up as shown below.



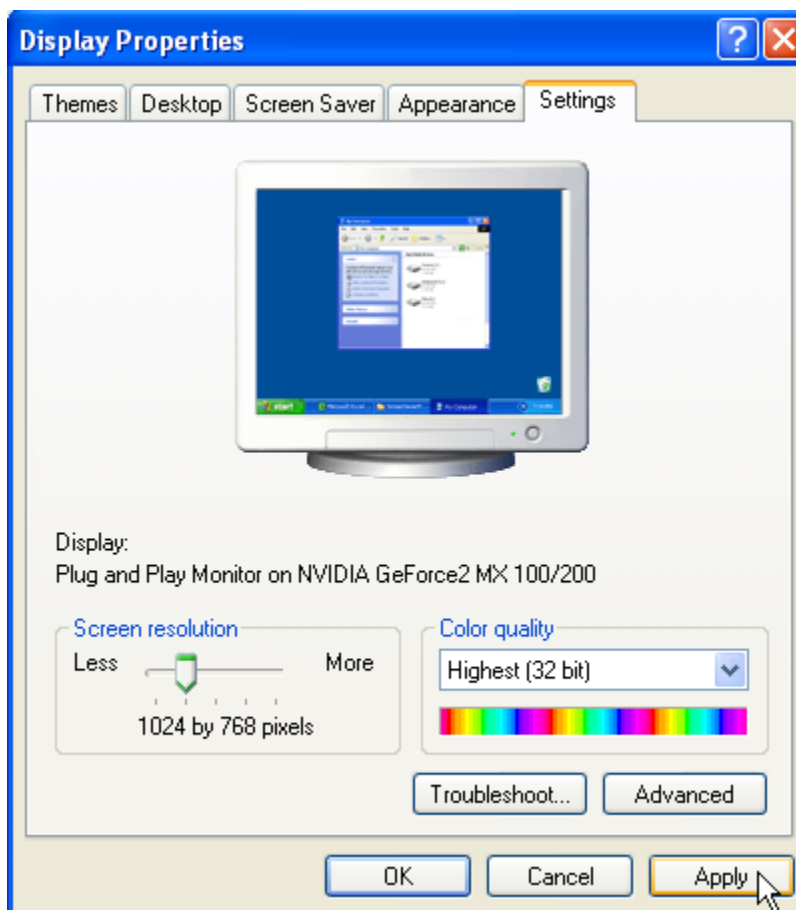
Click the Open button located at the lower right corner of the window, or click File menu and select Open, as shown below, to go to the patient's folder.



If you see the window is partially out of the screen, the screen resolution setting on the PC is too low to display the entire window. To adjust the screen resolution, go to Control Panel window and double click Display icon, as shown below.



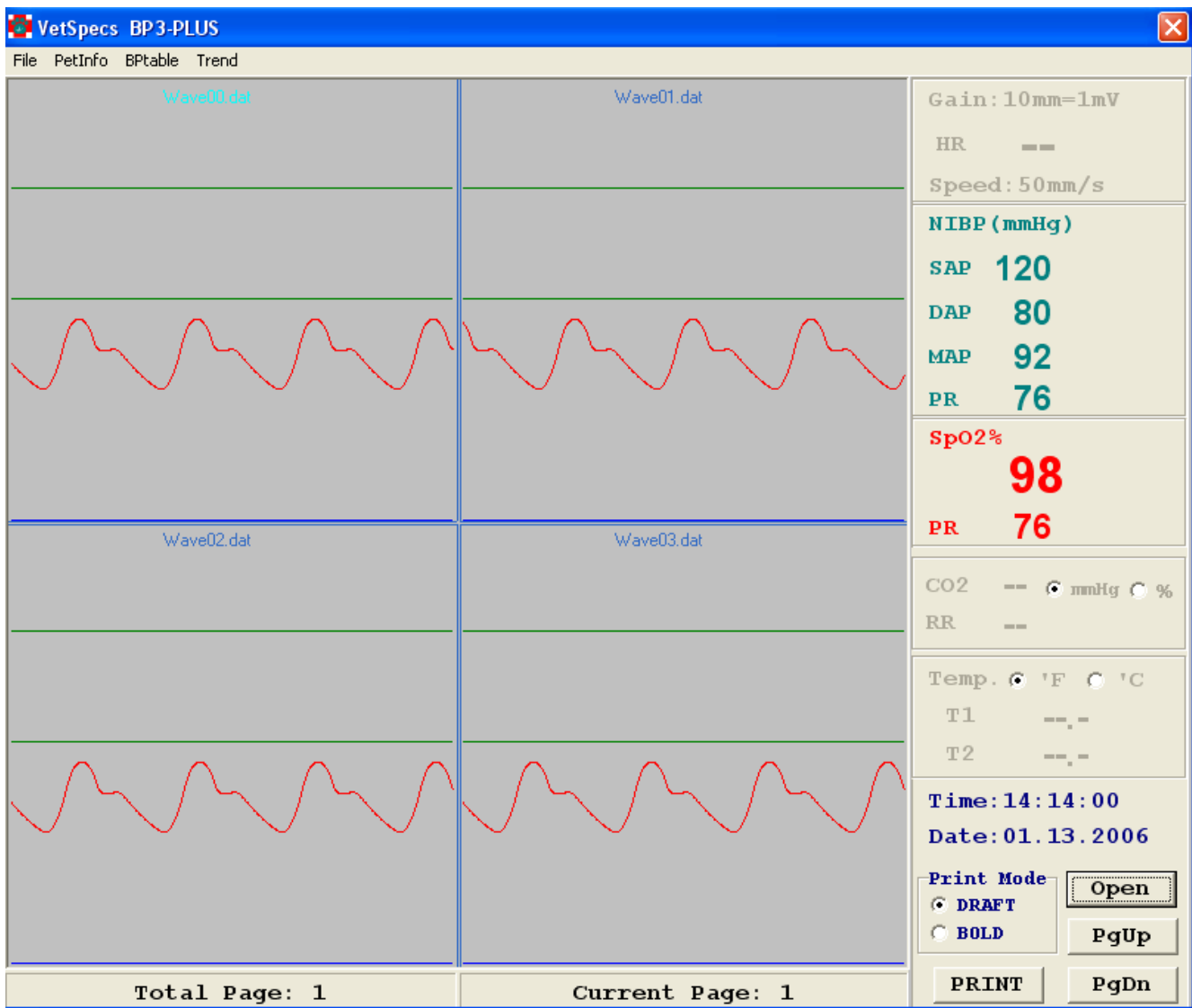
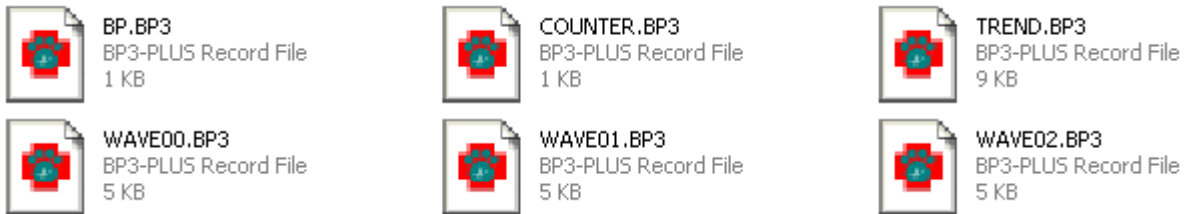
In Display Properties window, click Settings. In the window below, set Screen resolution to 1024 by 768 pixels or higher, and then click Apply button and OK button.





## 2. Review and print saved data

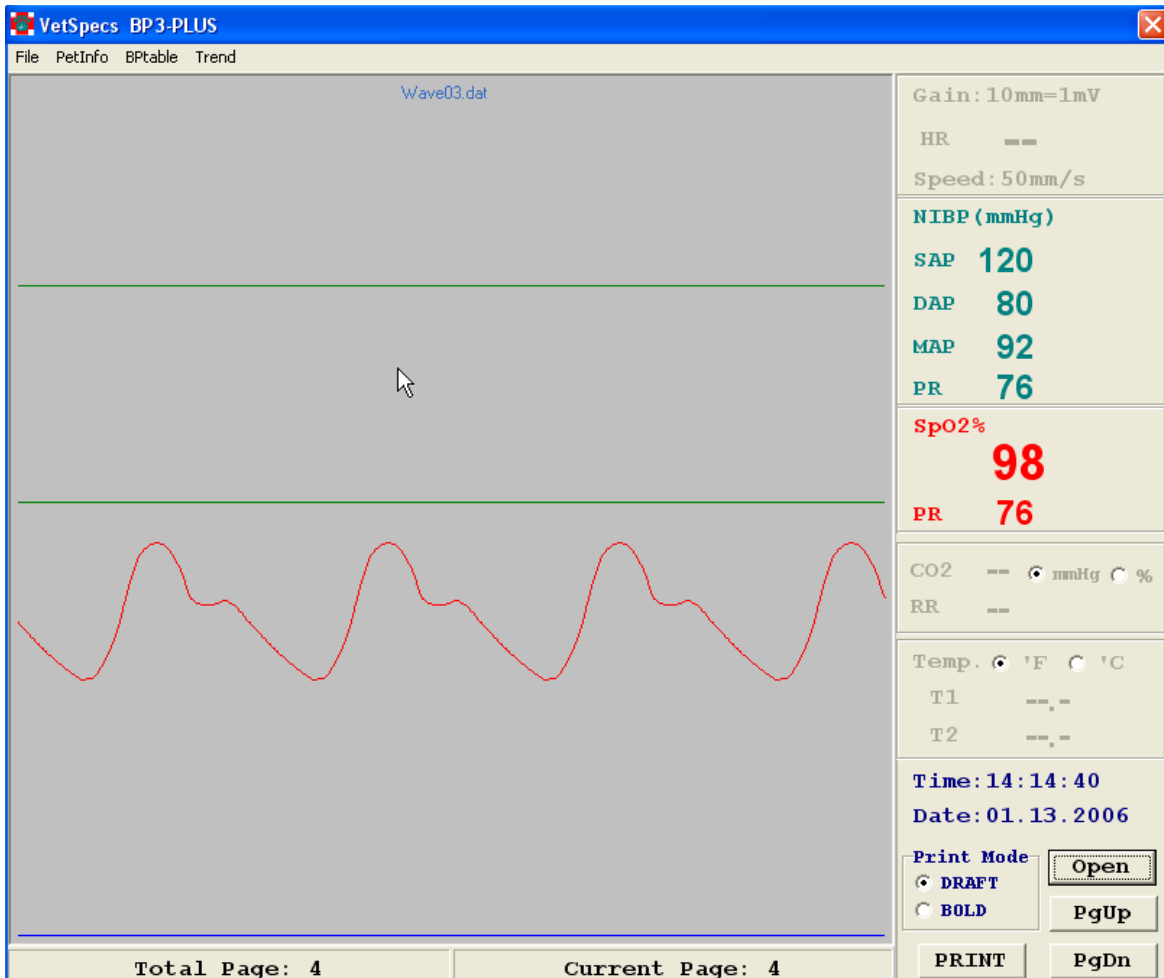
To review saved data, go to the folder and then open it. In the folder, you will see a number of files, WAVE00.BP3, WAVE01. BP3, WAVE02. BP3 ..... are screen capture files, BP. BP3 is the BP data file, and TREND. BP3 is the trends file. **You can open any of these files by double clicking on the file.**



Four-file display format

Four screen captures are opened up in one window. To select one of the four files, place the cursor in the waveform area, and then click the left key on the mouse. The readings displayed at the right side of the window correspond to the selected screen capture.

To display only one screen capture, place the cursor in the waveform area of a selected screen capture, and then double click the left key. The selected screen capture is displayed in the whole window, as shown below. To go back to the four-file display format, place the cursor in the waveform area, and then double click the left key.



Single-file display format

To change pages, click PgDn or PgUp button located at the lower right corner of the window.

To print a screen capture, select it, and then click PRINT button. The screen capture will be printed through the default printer of the PC.

You can delete any screen captures. To delete a screen capture, place the cursor in the waveform area, and then click the right key on the mouse.

To view BP readings table, in a screen capture window, click BTable button located at the upper left corner of the window. The BTable window pops up, as shown below.

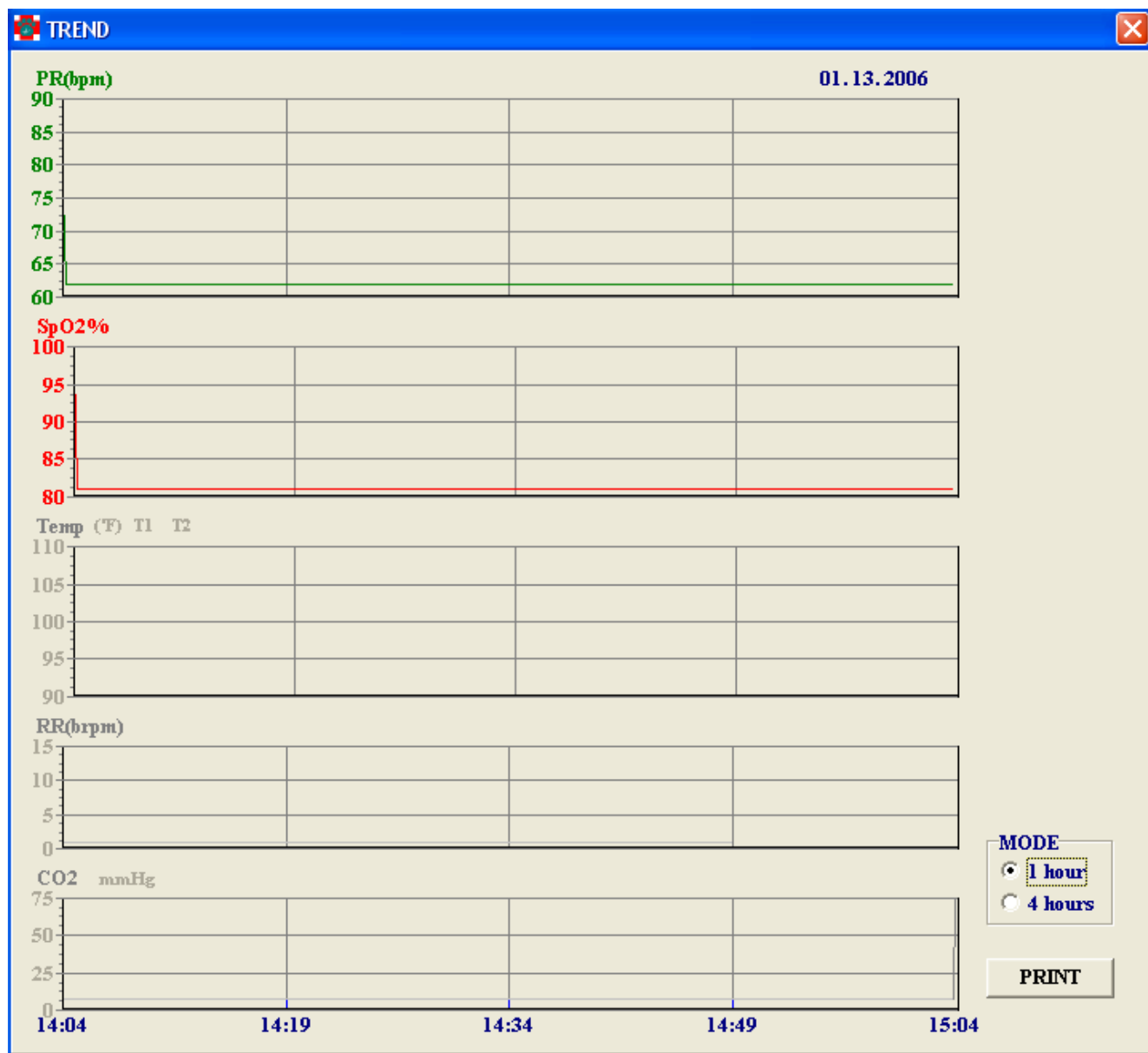
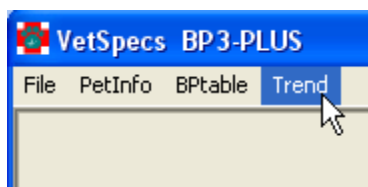


AVERAGE:    126    81    96    78					
No.	Time	SAP	DAP	MAP	PR
01	04:43	128	84	98	80
02	04:44	129	82	97	80
03	04:45	131	81	98	76
04	04:45	128	79	95	76
05	04:46	126	80	94	80
06	04:47	128	87	100	78
07	04:48	128	77	94	78
08	04:49	129	86	100	76
09	04:50	123	82	95	82
10	04:51	121	69	86	76
11	04:51	129	79	95	82
12	04:52	128	82	97	82
13	04:53	138	92	107	76
14	04:53	140	91	108	78
15	04:54	131	82	98	70
16	04:55	133	84	100	74
17	04:55	121	71	87	76
18	04:57	123	81	95	76
19	04:58	114	69	84	78
20	04:58	124	77	92	90
21	04:59	128	79	95	80
22	04:59	118	76	90	82
23	05:00	126	77	93	80
24	05:01	123	81	95	78
25	05:01	118	72	87	76
26	05:02	128	92	104	80
27	05:02	128	92	104	78
28	05:03	129	82	97	78
29	05:04	129	89	102	78

Page 1  
PRINT

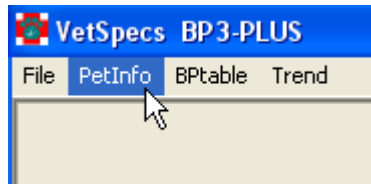
To print out the BP readings table, click PRINT button as shown above.

To review trends, click Trend button located at the upper left corner of the window. The TREND window pops up, as shown below.



To print, click PRINT button. The Trends will be printed out through the default printer of the PC.

To input patient information, click PetInfo button located at the upper left corner of the window, as shown below.



The PetInformation window pops up, as shown below. Type in patient information and/or comments, and click Save button. You can upgrade the information any time you want.

A screenshot of the "PetInformation" window. The window has a blue title bar with the text "PetInformation" and standard window control buttons (minimize, maximize, close). The main area contains a form with the following fields:

- Owner: Joe Smith
- Pet's Name: Champ
- Breed: Lhasa Apso
- Sex: M
- Weight: 15 lb
- Age: 1

Below the form is a large, empty text area for comments. In the bottom right corner, there are two buttons: "Save" and "PRINT". A mouse cursor is hovering over the "Save" button.

## V. Maintenance

Keep the BP-3 Plus away from heat sources, liquid, and flammable or corrosive materials. Avoid dusty, humid, or wet places. Do not block the ventilation vent.

Do not use a rough cloth or towel to clean the screen as it may produce scratches. Only use soft tissue paper wet with a little bit of liquid cleaner to clean the screen. Clean the outside of the BP-3 Plus with a soft cloth.

Clean the cuffs with a towel wet with a little bit of liquid cleaner. Do not wash the BP sensor bands and cuffs. Entry of liquid into the sensor bands or cuffs could damage the BP module.

The SpO2 sensors can be cleaned with a towel wet with liquid cleaner. Do not wash or immerse them in liquid.

Do not steam or autoclave any accessories. Do not modify any accessories. Do not use any BP-3 Plus accessories on other monitors not made by VetSpecs. Never use on the BP-3 Plus any cables, leads, or sensors that were not provided by VetSpecs. Never have the BP-3 Plus serviced by any unauthorized person. Warranty for the BP-3 Plus is automatically voided if any of the above situations occurred.

## VI. Specifications

Screen:	5.5" color TFT LCD
Dimensions:	7.5" X 11" X 6.5" (D/W/H)
Weight:	7 lbs
Power Requirements:	110V/60Hz or 220V/50Hz
Waveform Speeds:	25 mm/s and 50 mm/s (default)
BP Range:	30 - 280 mmHg
PR Range:	0 - 400 bpm
SpO2 Range:	0 - 100%

## **VII. Modules and accessories**

One BP module, one BP tube, one long BP sensor band, one short BP sensor band, and six BP cuffs of different sizes, one SpO2 module, one SpO2 lingual sensor, one SpO2 leg/toe sensor, one USB flash drive, one USB extension cable, one BP-3 Plus Data Management software CD, one power cord, and one BP-3 User's Manual.

## **VIII. Customer services**

**For technical support (customer training),  
please call 0800-197-2998.**

**If you are experiencing technical problem(s),  
please call 0800-197-2998.**

**To order accessories or modules,  
please call 0800-197-2998.**

**or visit [www.vetspecsEU.com](http://www.vetspecsEU.com).**

# LIMITED WARRANTY

VetSpecs, Inc. (“VetSpecs”) warrants the **VetSpecs® BP-3 Plus main unit (hereinafter “the BP-3 Plus”)** to be free from defects in materials and workmanship, when stored under appropriate conditions and given normal, proper and intended usage, for **TWO (2)** years from the date of delivery of the BP-3 Plus to the original end user purchaser (“Buyer”). VetSpecs agrees during the applicable warranty period to repair or replace all defective products by VetSpecs and without cost to Buyer. VetSpecs shall not have any obligation under this Limited Warranty to make replacements which result, in whole or in part, from catastrophe, fault or negligence of Buyer, or anyone claiming through or on behalf of Buyer, or from improper use of the BP-3 Plus, or use of the BP-3 Plus in a manner for which it was not designed, or by cause external to the BP-3 Plus.

The BP module, SpO2 module, and USB extension cable are covered by a one-year limited warranty. The BP sensor bands and SpO2 sensors are covered by a 6-month limited warranty. The USB flash drive is covered by a 90-day limited warranty.

Buyer shall notify VetSpecs of any product which it believes to be defective during the warranty period. Such product shall be returned by Buyer, transportation and insurance prepaid, to VetSpecs for examination and testing. VetSpecs shall repair or replace any such product found to be so defective and return such product to Buyer, transportation and insurance prepaid.

The provisions of the foregoing Limited Warranty are exclusive and are expressly in lieu of any other warranty, whether express or implied, written or oral. VetSpecs neither assumes nor authorizes any employee, agent, distributor or other person or entity to assume for it any other liability in connection with the manufacture, sale, supplying or use of the BP-3 Plus. VetSpecs’ liability arising out of the manufacture, sale or supplying of the BP-3 Plus or its use or disposition, whether based upon warranty, contract, tort or otherwise, shall not exceed the actual purchase price paid by Buyer for the BP-3 Plus. In no event shall VetSpecs be liable to Buyer or any other person or entity for special, incidental or consequential damages (including, but not limited to, loss of profits, damages to properties, and injuries to the patient and/or the user) arising out of the manufacture, sale, supplying or use of the BP-3 Plus. The foregoing Limited Warranty extends to Buyer only and shall not be applicable to any other person or entity including, without limitation, customers of Buyer.