User Manual

Blood Pressure Monitor For Animals
PetPro

PetPro Blood Pressure Monitor is a clinical blood pressure automatic monitor, which is specially developed for animal blood pressure measurement. The subsequent upgrade will increase the function of pulse oxygen saturation and temperature measurement. The blood pressure cuff is tied to the pet's forelimb or tail. Portable devices are available in pet hospitals, which can be used for dynamic monitoring of blood pressure, continuous monitoring and testing of different animal ID.

PetPro is a portable device which is lightweight and supports touch and keystroke operation. The device is powered by a single rechargeable lithium-ion battery or four AA batteries at the bottom of the device. All parameters in the device can set the highest and lowest alarm limits.

Directory

1. Icons and symbols

Symbol	Details
⚙	Access the Settings screen
	Small animal model
	Large animal model
☰	Open the icon menu
↺	Start interval blood pressure measurement pattern
🔊	Adjust the volume
	View data
X	Exit menu
←	Return to Upper menu
🗑	Delete all stored memory data
AVG	Mean selected blood pressure values
❤	Begin STAT mode
∦	Bluetooth
⏻	On/off/start/stop blood pressure measurements
🔋	Battery power indicator

2. *Blood Pressure Monitor*
2.1 Appearance

Setting button
Enter the Settings menu.

Power button
Short press to turn it on, long press for 2 seconds to turn it off; After turning it on, short press to measure or stop measurement.

Animal mode switch button
Switch animal mode.

2.2 Connection Interface

1. Power adapter interface

   Insert the AC adapter plug into the PetPro monitor, then plug the other end of the AC adapter into the power supply to charge the battery, and only use the AC adapter provided by our company, only use the AC adapter when using lithium battery power supply.

2. Blood pressure cuff interface

   Connect the pet hose to the back of the monitor and make sure the connector is connected to the correct position.

2.3 Screen display

The monitor boot will display the measurement interface. Here is a quick preview of the key symbols and values you will see.
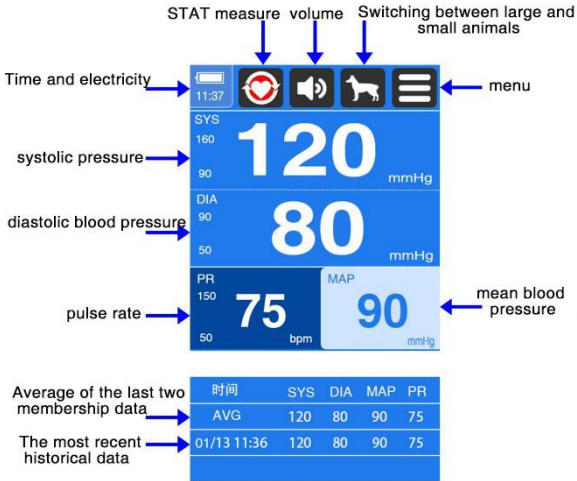
Icon menu
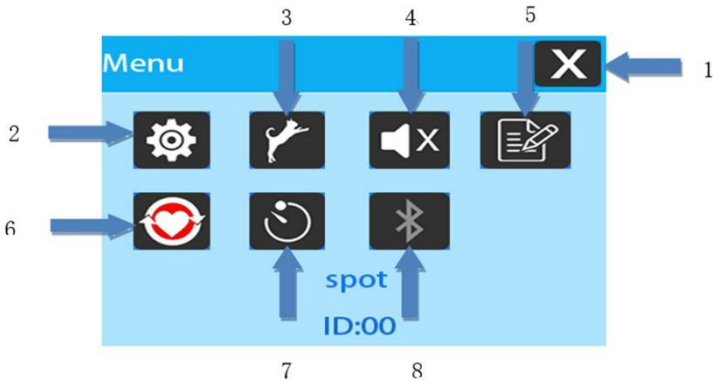
After pressing the "Menu" button on the main interface, the "Icon Menu" will open.

The function settings of the device can be viewed through the icon indication. During blood pressure measurement, the "icon menu" cannot be accessed.

    1.Exit the icon menu
    2.Configurations
    3.Selection of animals
    4.speaker volume
    5.Storage list
    6.STAT mode (continuous measurement mode)
    7.interval blood pressure measurement pattern
    8.Bluetooth

2.4 Button on/Off

⏻ Button indicates the status of the PetPro monitor.

1. In shutdown state, short press the button to boot, boot time by two seconds shutdown.
2. During the blood pressure reading, press the button to measure the blood pressure and stop the measurement again.
3. When it comes to touch screen, touch blood pressure measurement area can start or stop measurement.The area shown below.
4. Error, prompt status information, will appear prompt warning.

3. System functions

3.1 Animal Mode Selection

Select small animal mode, use #4 below specification cuff, suitable for measuring small animals (<8 kg), such as cats and dogs.

Select large animal model, use #5 and above cuff, suitable for measuring large animal (>8 kg) dogs.

If animal mode does not match, touch the main interface "size animal button" or shortcut key button to switch.

(size animal button)   (shortcut key)

3.2 Volume

The default setting of the speaker in the PetPro is turned off to prevent pets from being disturbed by sound. To switch between speaker off, low volume and high volume, please press the "volume" button to switch.

(Volume)

3.3 Settings

To enter the settings interface, select the settings button (⚙) in the menu.

Work mode
Multiple user or guardianship option

User settings
Optional or user

Alarm settings
Set alarm upper and lower limits

Set	X
Set Workmode	Spot
Set User	>
Set Alarm	>
Set NIBP	>
Set System	>
Review	>

Blood pressure settings
Set blood pressure parameters

System settings
Set system parameters

Data review
You can view historical data lists and trend charts

3.4 Work mode

PetPro support (Spot) multi-user measurement mode or (Monitor) monitoring mode.

● Spot support up to 100 ID number management (0-99), each I D supports 200 sets of data storage, suitable for different animal temporary measurement management. When power saving mode is turned on, it will enter sleep mode after 10 minutes without measurement.

● Monitor only support single user management, support up to 1000 groups of data storage, suitable for continuous monitoring management.

4. User settings

(Spot mode)   (Monitor mode)

- ● User selection
- ● Add users
- ● Delete users

4.1 Alarm settings

PetPro BP Monitor allows clinical alarm signals for all values (systolic blood pressure, diastolic blood pressure, pulse rate).
- ● to change the alarm value, select the settings interface in the icon menu and then select "alarm settings ".
- ● Touch the parameter to be set, and then the setting interface will pop up.
- ● The left number is the minimum value that can be set, and the right number is the maximum value that can be set. The white progress bar indicates the area that the current upper and lower limits occupied in the total range.
- ● The minimum value of the upper limit setting cannot be lower than the lower limit, and the maximum value of the lower limit setting cannot be higher than the value of the upper limit setting.
- ● Click the value box to enter the value, click "OK" to confirm..
- ● When an alarm is triggered, the value beyond the set range will be prompted on the main interface. If the speaker is turned on, a beep will sound. *See section 10 for more information on alarms..*

Set Alarm ← X		SYS High ← X
SYS High	100mmHg	
SYS Low	90mmHg	100 mmHg
DIA High	90mmHg	40 ▬▬▬ 280
DIA Low	50mmHg	OK
PR High	200bpm	
PR Low	50bpm	

	1	2	3	Del
	4	5	6	0
	7	8	9	.

SYS upper and lower limit range :40 mmHg ~280 mmHg
DIA upper and lower limit range :10 mmHg ~220 mmHg
Pulse rate upper and lower limit setting range :25 bpm ~500 bpm

4.2 Blood pressure settings

Set NIBP ← X	
Measure Mode	Manual
Cuff Type	Big
Pressure Unit	mmHg
Interval	15min

1. Measurement mode: Manual(manual), Auto(automatic),
    Stat(continuous).
2. Sleeve type: small cuff mode (small animal), large cuff mode (large
    animal).

3. Pressure unit: mmHg(mmHg), KPA.
4. measurement interval: measurement interval Auto(automatic mode), the interval time can be set 1,2,3,4,5,10,15,30,60 and 90 minutes.

4.3 System settings

Set System ← X	
Low Power Mode	ON
Bluetooch	OFF
Language	EN
Brightness	2
Alarm volume	3
Set Time	>
Machine Mainte	>
Maching Info	>
Default config	>

Select "System Settings" in the "Settings" menu, and the following menu will pop up:

- Energy saving mode: On, it will automatically sleep in SPOT mode.
                    Off, it will not sleep in SPOT mode.
    Note: energy saving mode does not work on monitoring mode.
- Bluetooth: Bluetooth on / off.
- Language options: English,Spanish, French, Turkish, Russian, Deutsch, Portuguese.
- Brightness Options: Level 1, Level 2, Level 3, Level 4
- "Alarm Volume" options: Level 0, Level 1, Level 2, Level 3.
- Time: Time adjustment.
- "Machine Mainte ": Set language. Pass word is "111112".
- Device Information: Device Version Number.
- Restore factory settings: In addition to language settings, other functions can be restored to default factory settings.

4.4 Data review

1. Select "Data Review" in the "Settings" menu or select [icon] in the icon menu to enter the historical data viewing interface.
For example, in Monitor mode:

Review	← X
NIBP Table	>
NIBP Trend	>

The users can check the blood pressure list and blood pressure trend chart in Data Review:

NIBP	🗑 AVG X
Time	**SYS DIA MAP PR**
01/13 10:39	129 70 113 110

NIBP Trend ← X

ID:0
Page: 1/1
Date: 2021.1.13-2021.1.13

mmHg   bpm
-SYS -DIA   -PR

mmHg		bpm
200		250
180		200
120		150
80		100
40		50

10:39 10:39 10:39 10:39 10:39 10:39
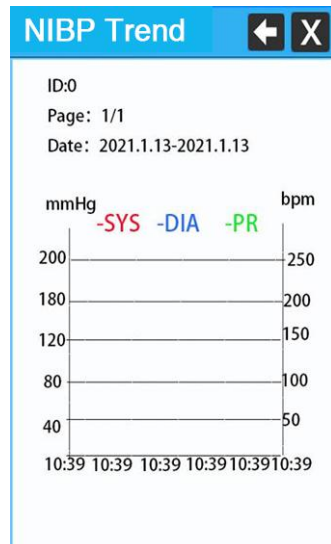
The trend graph shows systolic blood pressure, diastolic blood pressure, pulse rate, and different colors. The vertical axis on the left represents pressure, and the vertical axis on the right represents pulse rate. The red line represents SYS, the blue line represents DIA, and the green line represents PR. . The horizontal axis below shows the time, and the trend also includes ID, page number, Date (the time range of the data on this page), and all data can be reviewed by turning the page.

NIBP			🗑 AVG X	
Time	SYS	DIA	MAP	PR
AVG	129	70	113	113
01/13 10:39	129	70	113	113

Blood pressure lists show measurements including time, SYS,DIA,MAP,PR, and average calculations. When we click, we will enter the average calculation interface, and select the data result of the average we want to calculate. When we click the delete icon, we can select the data result we want to delete.

2. View Average Data
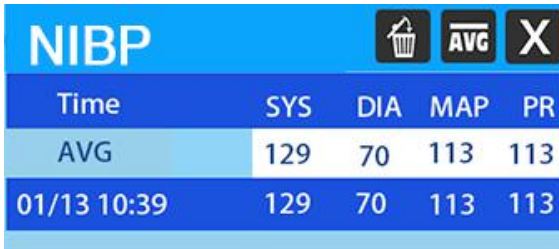
In the data list, blood pressure data can be averaged.Click on the identifier "to select the row you want to calculate the average value, showing the average value of the selected measurement result

Average of selected data

3. Delete data
In the data list, clicking on the identifier "Delete data", it will delete all blood pressure data under the user.

Delete all memory data

5. Blood pressure measurements
5.1 Select the cuff

PetPro monitor is equipped with different sizes of blood pressure cuff. Each cuff contains important marks, which helps to select the correct cuff size, measure the circumference of the limb, and select the cuff with a width of 40% of the dog's circumference and 30% of the cat's circumference.When the cuff is too small, the blood pressure is too high.

It is recommended that the cuff be placed on the forelimb when the pet lies on the right or left. This helps ensure that the cuff is at the same level as the heart, and the measurement accuracy is the highest. In addition, pets are less likely to retract their forelimbs when the cuff is gently squeezed during measurement. The cuff should be placed in a position to align its arterial markings with the limb artery.

If the pet looks comfortable, fix the cuff and hold the limb during blood pressure measurement. This will help keep the cuff at the same level as the heart and relax the pet's muscles. If the pet is anxious enough to bite or scratch the cuff or stand, the base of the tail is a good fixed position.

5.2 Blood pressure measurements

1. Fix pet position, lie down, sit down or lie down. Place the cuff on the limb to ensure that it is not placed on the joint. The cuff is a sensor to ensure that the cuff is close to the pet skin to provide a better signal for the monitor. Connect the cuff hose to the monitor hose.
2. Select animal type according to animal weight or cuff type.
3. Press the start / stop button or click in the blood pressure measurement data screen area to start the blood pressure measurement. After the measurement is completed, the measurement results are displayed.
4. During the measurement, start / stop button or click in the blood pressure measurement data screen area to stop the measurement.

Tip: during blood pressure readings, the icon menu is not available. to access the icon menu, wait until the blood pressure reading is complete or press the start/stop button to stop the reading.
Tip: it is recommended that animals be measured after 5 minutes of quiet.

5.3 Interval measurement mode

During the blood pressure interval measurement mode, the PetPro monitor automatically measures the blood pressure value according to the set time interval.The interval can be modified by the interval blood pressure setting function.

Tip: in interval measurement, blood pressure measurement can be started manually. If the measurement is stopped during the measurement, the

equipment will exit the interval measurement mode and enter the manual measurement mode

Interval measurement mode, the following number represents the interval time.

5.4 STAT mode (continuous measurement mode)

PetPro monitor will automatically continuously measure blood pressure in STAT mode.

Tip: in STAT mode, when the equipment does not start measuring blood pressure, it can start the blood pressure measurement manually. If the measurement is stopped during the measurement process, the equipment will exit the interval measurement mode and enter the manual measurement mode
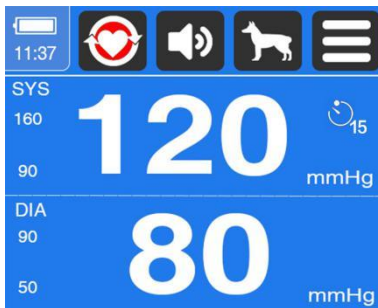

STAT mode

6. Alarm
6.1 Technical alarm

When an error occurs during blood pressure measurement, a technical alarm will be activated.

During the alarm period, a sound will be emitted and a pop-up window will appear to warn the cause of the failure.Invalid Blood Pressures will not be displayed.

Alarm	Reasons	Solutions
Air leakage	There is a leak in the cuff, hose or main unit. It will also appear if the cuff or hose is not connected to the main unit.	Check if the hose is connected to the BP monitor and cuff. Check if the cuff is properly fastened. Check if the cuff is in the correct position. Check if the cuff is leaking. Check if the hose connection is damaged or loose.
Beyond Scope	Blood pressure exceeds PetPro monitoring	Make sure that the cuff used is the correct size. Pet may be too active
Weak signal	BP monitor did not receive pet's strong signal. If Rapid deflation occurred during the measurement, it may also happen.	Check if the cuff is in the correct position. Check the patient. Check if the cuff is properly fastened. Check if the correct size cuff is used.
Excessive exercise	The monitor is receiving a sudden noise or operation.	Check the animal mode. It may be set incorrectly. Check if the pet is trembling or has an excessive activity. Check if the cuff is in the correct position. Check if the correct size cuff is used.
Measuring time is too long	The monitor couldn't detect strong and continuous signals from pets for a long time.	Check to make sure if the cuff is tightly attached to the pet and is properly placed. Check if the cuff is in the correct position. Check if the pet is moving or shaking.
Battery is too low	Low battery power	See the battery life indicator on the main screen. If necessary, replace the battery.
Airflow	Air can not pass through the hose or	Check to make sure that the hose is not bent and not squeezed.

blocked	cuff	Check if the pet is lying or stepping on the cuff. Check if the cuff is in the correct position.
Wrong cuff pressure	The cuff pressure temporarily exceeds 300 mmHg due to pet movement, air blockage, or use of a small cuff.	Make sure the appropriate cuff is used. Check to make sure that the hose is not bent and not squeezed. Check if the pet is lying or stepping on the cuff. Make sure the pet is not overly active.
BP Monitor not ready	The BP monitor is preparing for the next measurement or may need maintenance.	Press the START/STOP key to start a new measurement. If repeated errors occur, calibration or maintenance may be required.
System error	Hardware problems or abnormal cuff pressure when it's turned on.	Disconnect the cuff from the device and restart. If it can not be solved, it needs maintenance.

6.2 Physiological alarm

Physiological alarm occurs when the measured value reaches or exceeds the high or low limit set by this parameter. When physical alarm occurs, there will be a red warning LED indicator and intermittent beep sound.

7. Technical information
7.1 Product model

Model	Model Description
PetPro	Single blood pressure

7.2 Performance indicators

Blood pressure performance

Method of measurement	Schematic method
Blood pressure range:	SYS：40–270mmHg
	DIA： 20-230 mmHg
	MEAN：10–200mmHg
Pulse rate range:	BPM 40-240
Cuff accuracy:	(0 mmHg -300mmHg)±3 mmHg

Other
Note: if the machine is used or stored outside the specified temperature and humidity range, its performance will be affected.

Conditions of use:	0°C to 50°C ,15% to 90% humidity, no condensation
Storage conditions:	-20°C to 65°C ,15% to 90% humidity, no condensation
Altitude:	Measurement accuracy is not affected by altitude
Power:	Lithium ion batteries and/or AC adapters
Input voltage range:	Universal (100 to 240 V AC)
Input frequency range:	General purpose (50-60 Hz)
Adapter output:	DC: 9 V-2A
Lithium batteries:	7.4 V,2.6Ah ,19.24Wh
Size:	15.9 cm x 12.7cm x 13.3cm
Weight:	0.95 Kg with battery

8. Frequently asked questions

How many measurements can be stored in memory?

SPOT mode, each ID number can store 200 measurement data.When the 201th measurement is carried out, the monitor automatically covers the first measurement.When the creation ID is full, the user needs to manually delete the previous ID number to create a new ID number.
Monitor mode, up to 1000 measurements can be stored. The monitor has a loop memory. In the 1001 measurement, the monitor automatically covers the first measurement.

For medium-sized dogs, which animal model should I choose?

Judge according to the size of the cuff used. If the most suitable cuff used is #3 or smaller, select small animal mode. Select large animal mode if the most suitable cuff is #4 cuff or larger cuff.

How to choose the correct cuff size?

Wrap the cuff around the pet's limbs to ensure that the scale is within the marked range. If there are two different cuff sizes that match the pet, choose a larger size.

How long can the battery last?

When continuously monitoring blood pressure, the measurement interval is set to 5 minutes, and the fully charged battery should continue to work for at least 4 hours before charging. If only manual BP measurements are performed, a fully charged battery should continue to perform at least 150 BP measurements before recharging. It takes more than 6 hours to fully charge the battery. The battery life depends to a large extent on how long the touch screen is displayed as "on". In order to extend the life of the battery as much as possible, it is recommended to turn on the automatic shutdown.

Can this monitor be used in awake and anaesthetic animals?

Yes.PetPro Blood Pressure Monitor can be used in anesthetized and awake animals.

How to prevent the cuff from sliding down or falling off?

Tie the cuff as tightly as possible. Special attention must be paid to the density or thickness of species fur. If the cuff is not fastened, check the fur magic stick and, if possible, tear off the magic stick.

Any other power options?

Yes. The device is equipped with a main power supply, connected to the built-in battery charge. When the device is not connected to the power supply, the battery allows the device to be portable for use.

How much is the minimum and maximum weight of cats and dogs

Min 1kgs to Max 200kgs.

When to use PetPro monitors for blood pressure measurements?

There are no restrictions. Any cat or dog with a suitable cuff range limb is applicable.

Warranty time

1 year Warranty for the main unit, 3 months for the blood pressure hose.

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