

THE VETSPECS® CAPNO-40
VETERINARY MAINSTREAM CAPNOGRAPH
WITH PULSE OXIMETER

USER'S MANUAL

The Capno-40 is for veterinary use only.

VETSPECS EUROPE CO., LTD.

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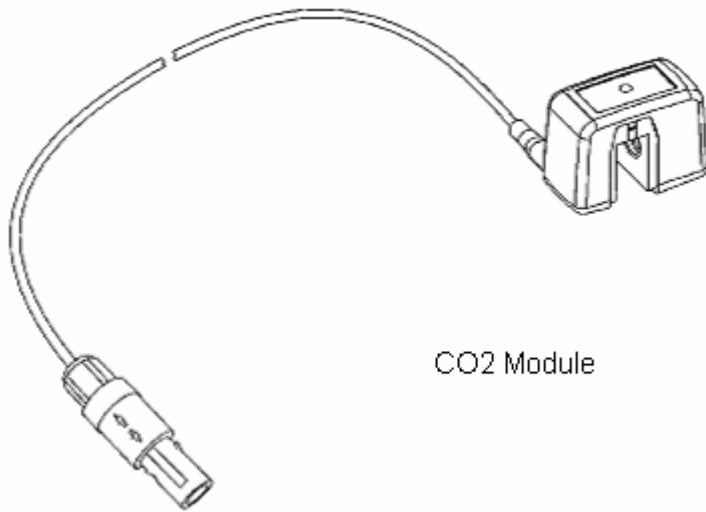
I. Installation



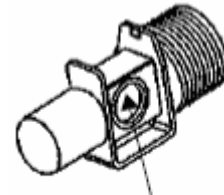
Keep the Capno-40 away from heat sources, liquid, and flammable or corrosive materials. Avoid dusty, humid, or wet places.

1. CO2 module and airway adapters

The mainstream capnography function consists of a CO2 module, labeled as “VetSpecs® Mainstream CO2 Sensor”, and two airway adapters (one large and one small).

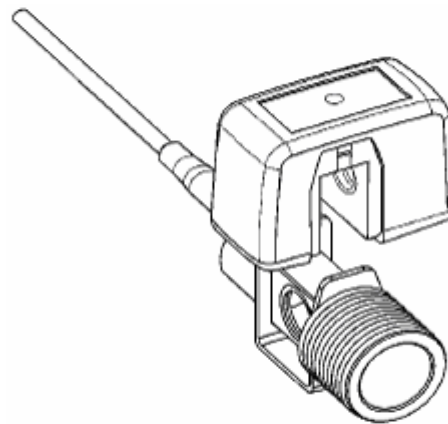


CO2 Module



Airway adapter

Press the CO2 module onto the airway adapter. It will “click” into place when properly seated.

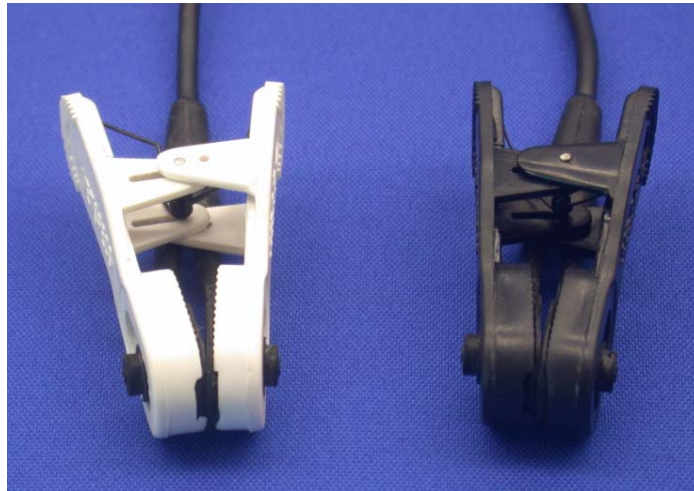


Connect the CO2 module to CO2 port on the Capno-40.

Do not apply force to the connection point between the module and its cable. Make sure the CO2 module is not on the floor to accidentally be tramped upon.

2. SpO2 sensors and extension cable

The Capno-40 comes standard with a SpO2 lingual sensor (black clip), a SpO2 leg/toe sensor (white clip), and a SpO2 sensor extension cable. Connect the extension cable to SPO2 port on the Capno-40.



3. DDC

The optional DDC package includes a USB flash drive and a software CD, labeled VetSpecs® Capno-40 Data Management Software.

Plug the USB flash drive to the USB port, labeled DDC, on the back of the Capno-40.



Please see page 20 for instructions on installing the software on your PC.

4. Connecting the power cord

Plug the power cord into the power port on the back of the Capno-40, and the other end of the power cord into to an 110V/60Hz 3-line power outlet (in North America) or a 220V/50Hz 3-line power outlet.

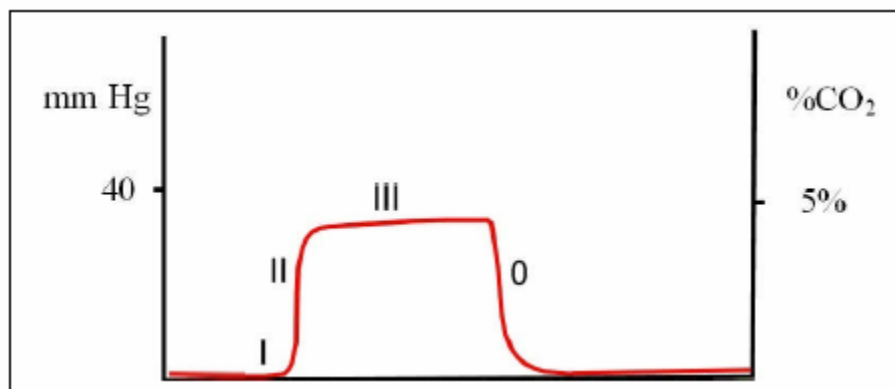
II. Clinical instructions

2.1 Digital mainstream capnography

1. The concept

Capnography is measurement and waveform display of CO₂ concentration at the patient's airway. It monitors various components of patient and anesthesia circuit/equipment as well as the critical connection between the two. A capnogram is the graphical waveform depicting CO₂ concentration throughout respiration. End-tidal CO₂, which can be expressed as mmHg or percentage, refers to the measurement of CO₂ concentration at the end of exhalation.

The normal range of end-tidal CO₂ value for most mammals is 30 – 45 mmHg or 4.0 – 5.5%. It is considered to be abnormal when the end-tidal CO₂ is higher than 50 mmHg (or 6.5%) or lower than 20 mmHg (or 2.5%). The diagram below shows the shape of a normal capnogram.



Phase I: A near zero baseline — Exhalation of CO₂-free gas contained in dead space.

Phase II: Rapid, sharp rise — Exhalation of mixed dead space and alveolar gas.

Phase III: Alveolar plateau — Exhalation of mostly alveolar gas. At the end of exhalation, CO₂ concentration reaches the peak - end-tidal CO₂ value.

Phase 0: Rapid, sharp down-stroke — Inhalation.

The Capno-40 incorporates VetSpecs® digital mainstream capnography, which provides real-

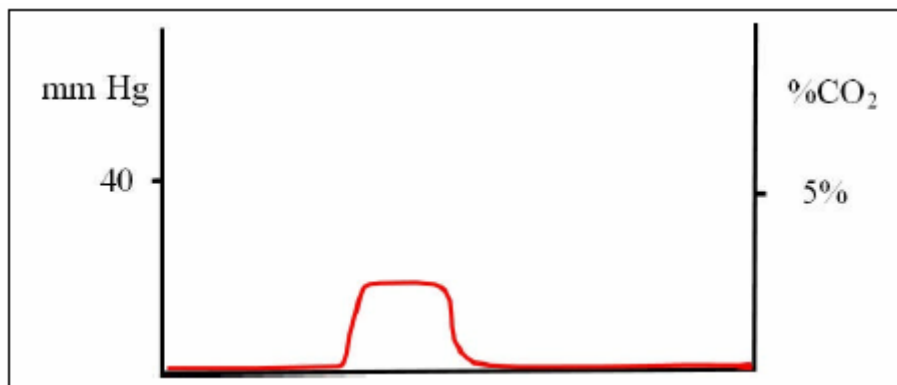
time CO₂ waveforms, end-tidal CO₂ values, respiratory rates, and a respiratory sound. Unlike side-stream or micro-stream capnography, mainstream capnography performs CO₂ measurements directly inside the airway, without drawing any gas from the airway.

2. Clinical implication

Normal end-tidal CO₂ values together with a normal capnogram indicate normal function of the patient's metabolism, circulation, and ventilation, and of the anesthetic machine. Increases in end-tidal CO₂ may be due to anesthetic induced respiratory depression, increased metabolism, or the addition of CO₂ to the circulatory system as a result of re-breathing CO₂. Re-breathing CO₂ can be due to soda lime exhaustion or incompetent expiratory valve on the anesthetic machine allowing exhaled CO₂ to be re-inhaled. Decreased or abolished end-tidal CO₂ may be due to hyperventilation, low cardiac output, respiratory arrest, or cardiac arrest.

Capnogram also provides vital information regarding the patient's airway potency. A depressed or absent capnogram may be due to a dislodged, misplaced, or obstructed endotracheal tube or airway, a leak around endotracheal tube cuff or, disconnection of the endotracheal tube from the anesthetic machine. The following are examples of abnormal capnograms.

Low readings

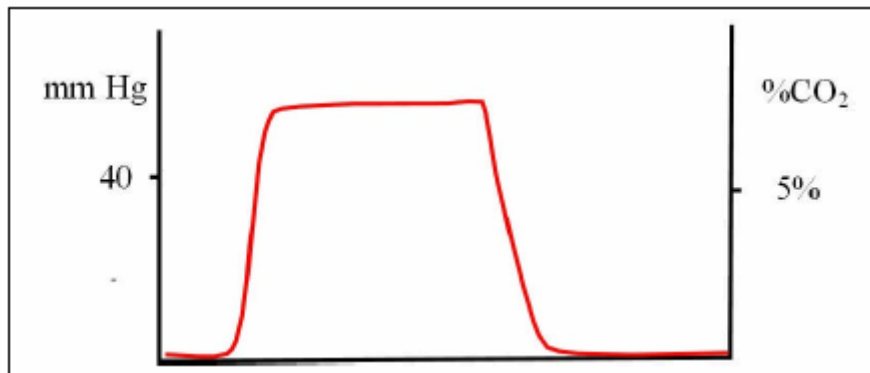


If end-tidal CO₂ readings are consistently below 20 mmHg (or 2.5%), look for the following causes:

- Increased respiratory rate
- Excessive mechanical ventilation – minute volume ventilation too high
- Reduced cardiac output – failure to deliver CO₂ to the lungs
- If the animal is intubated, check there are no leaks around the tube (dilution)

- Decreased metabolic activity – e.g. hypothermia

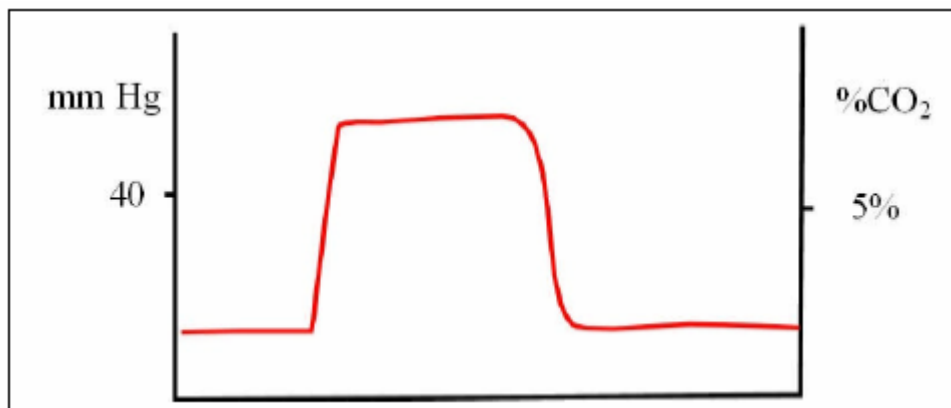
High readings



If end-tidal readings are consistently above 50 mmHg (or 6.5%), look for the following causes:

- Decreased respiratory rate
- Insufficient mechanical ventilation – minute volume ventilation too low
- Increased metabolic activity – shivering, hyperthermia

Rise in base-line caused by increased levels of inspired CO₂

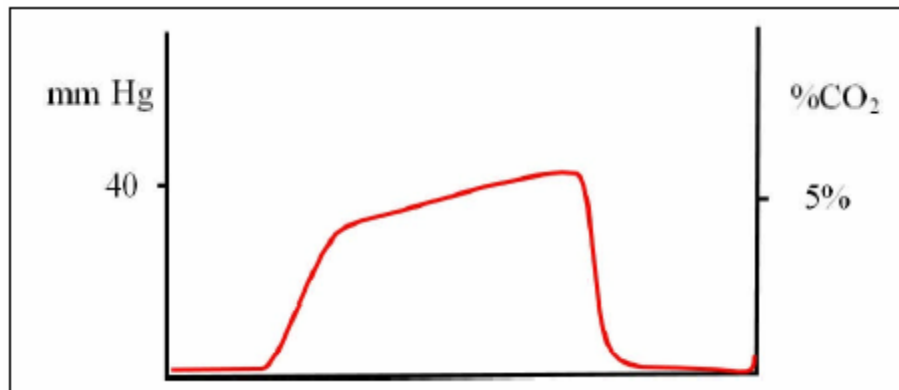


Possible causes:

- Insufficient fresh gas flow in non-rebreathing circuit
- Excessive dead space in anesthetic circuit
- Exhausted soda-lime in rebreathing circuit

Note that at the same time the end-tidal CO₂ value will also start to rise.

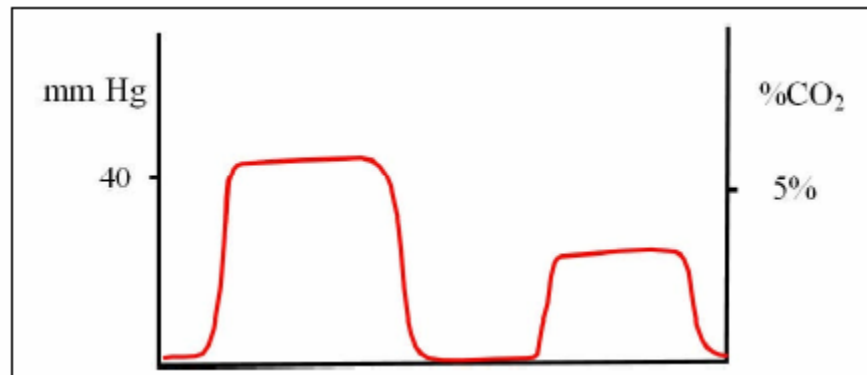
Increase in the slope of phase II and phase III



Possible causes: Reduced ability to expire – e.g.

- Block ET tube
- Bronchial disease / asthma
- Upper airway obstruction
- Faulty expiratory valve

Abrupt fall in end-tidal CO₂ level

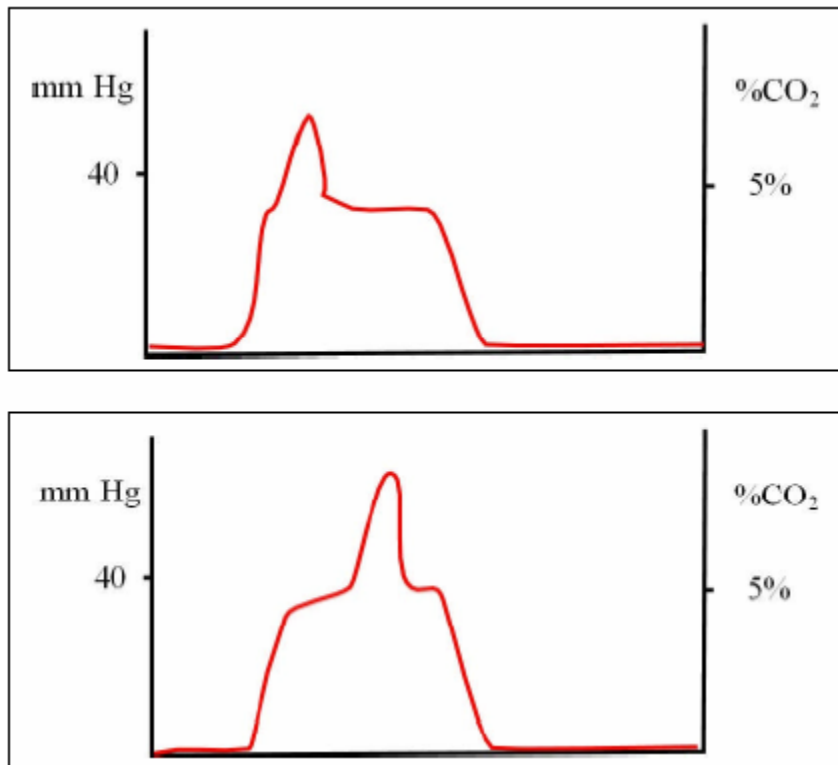


Possible causes: any effect leading to sudden reduced cardiac output

- Pulmonary artery compression

- Pulmonary artery embolism
- Sudden hemorrhage
- Acute cardiac tamponade
- Cardiac compression

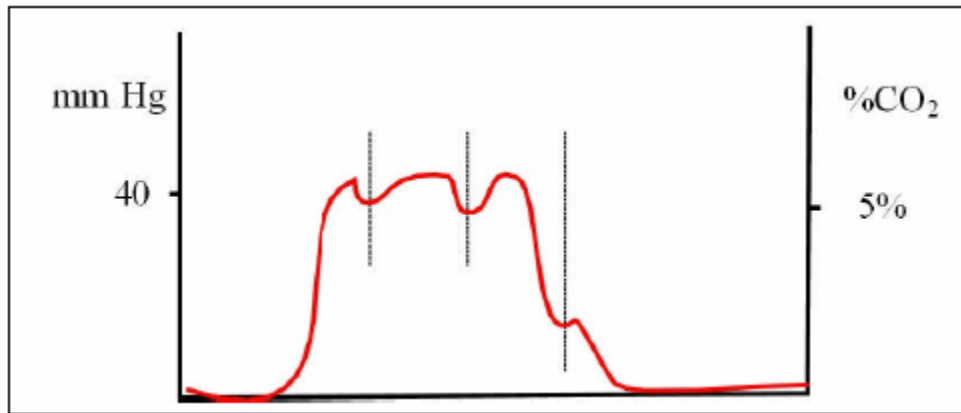
Differential emptying



The above capnograms can result from the following:

- Positioning of the ET tube at or beyond the carina, so that one side of the lung has impaired emptying. This makes the retained gas higher in CO₂ and later to empty than from the normal lung. The “spike” can occur anywhere in the plateau phase.
- Any functional blockage of a major airway, below the carina – foreign body, mucous, compressed airway, etc.

Cardiogenic oscillations



Cardiogenic oscillations are ripples superimposed on the expiratory plateau and the descending limb of the capnogram, which are caused by small gas movements inside the airway. Although cardiogenic oscillations can occur in any animal where the pulsations of the aorta and heart cause areas of lungs to be compressed and thereby emptied and filled, they are typically seen in large dogs with slow respiratory rates. The guide to the fact that this is happening is that the oscillations are in synch with the heartbeats. The displayed respiratory rate can be much higher than the actual respiratory rate when cardiogenic oscillations occur.

3. Operation instructions

The CO2 module will automatically start to calibrate as soon as it is powered on. In other words, turning on the Capno-40 with the CO2 module connected, or connecting the CO2 module to the Capno-40 which is powered on, will automatically trigger the CO2 module to calibrate. The calibration process takes about three minutes. **To ensure that the CO2 module is calibrated correctly, the following procedures must be followed closely. Otherwise, the CO2 module may not work properly, producing erroneous readings.**

1. Attach an airway adapter on the CO2 module (see pages 1-2) before connecting the CO2 module to the Capno-40.

Turn on the Capno-40, and connect the CO2 module to the Capno-40. **During the entire calibration process, both ends of the airway adapter must be open in the air and far away from the patient and the breathing circuit.** When the CO2 module is being calibrated, CO2 CAL is displayed. As soon as the calibration is completed, CO2 READY is displayed. It is suggested to power on the CO2 module before you prepare the patient for surgery.

2. Insert the airway adapter between the breathing circuit and the endotracheal tube when CO2 READY is displayed.
3. During a monitoring, if the CO2 module is disconnected from the Capno-40 or the power is turned off, you must first disconnect the airway adapter from both the breathing circuit and the endotracheal tube and place the airway adapter away from the patient, and then reconnect the CO2 module to the Capno-40 or turn on the power. Only re-insert the airway adapter between the breathing circuit and the endotracheal tube when CO2 READY is displayed again.
4. After a monitoring, disconnect the airway adapter from both the endotracheal tube and the breathing circuit, but leave the airway adapter on the CO2 module. If you are going to use the CO2 function soon in the next surgery, leave the CO2 module powered on.

Unplug the USB flash drive from the Capno-40, and then plug it back in, to refresh the internal memory of the Capno-40 (delete the trends recorded on the previous patient), and create a new folder on the USB flash drive for the new patient.

4. Digital respiratory sound

The Capno-40 features a digital respiratory sound which is originated from real-time CO2 measurements. The rhythm of the sound reflects the respiratory rate of the patient, while the tone of the sound responds to real-time CO2 registered in each breath. The respiratory sound allows you to continuously assess the patient's respiration status without watching the screen frequently.

The respiration sound can be set on or off as default in the menu. The volume of the respiration sound can be adjusted by pushing ↑ or ↓ key.

Troubleshooting

Problem: The capnogram seems normal, but the CO₂ value is erroneously high.

Possible causes and corrective actions:

The CO₂ module was not calibrated properly.

Re-calibrate the CO₂ module.

Problem: The capnogram is very erratic, or just a flat line on the CO₂ channel.

Possible causes and corrective actions:

The CO₂ module is malfunctioning.

Test the CO₂ module on yourself by breathing through the airway adapter. If the CO₂ module registers normally, try it again on the patient. If not, it needs to be replaced.

2.2 Pulse oximetry

1. The concept

Pulse oximetry provides a noninvasive and continuous estimate of oxygen saturation of hemoglobin in arterial blood. "SpO₂" 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: red light at approximately 660 nm and 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.

2. Applying the sensors

Attach the extension cable to the towel on the surgical table with the attached metal clip to prevent the weight of the cable from being applied to the sensor.

1. Lingual sensor (black clip)

The lingual sensor, featuring a soft spring, is intended for use only on the tongue. Place it at the center of the tongue, with the light-emitting side on top of the tongue.

2. Leg/toe sensor (white clip)

The leg/toe sensor, featuring a strong spring and a wider opening, 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

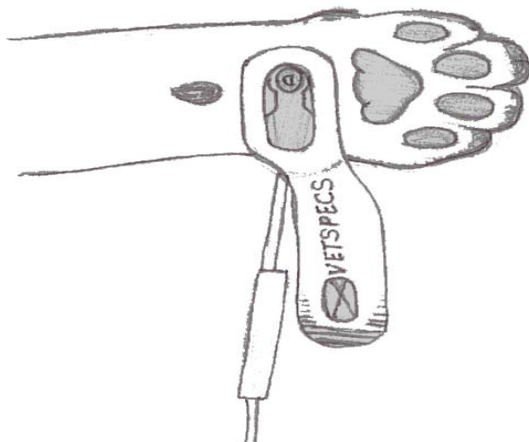
- The distal leg between the carpal pad and the metacarpal pad, with the light going through the leg from front to back, see sketch 1. If the sensor site is covered with dark hair and/or pigmented tissue, the hair on both sides must be clipped.
- A paw top to bottom with the light-emitting side on top of the paw and the other side on top of the metacarpal pad, see sketch 2. 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

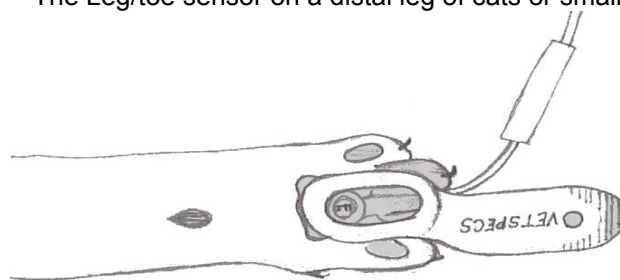
- The Achilles tendon, see Sketch 3. If the sensor site is covered with dark hair and/or pigmented tissue, the hair on both sides must be clipped.
- A toe side to side, not top to bottom, see sketch 4. Apply the sensor to a toe with light skin if possible. If the toe is covered with dark hair and/or 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 1.

In exotics, place the lingual sensor on the tongue or the leg/toe sensor on a leg, paw, or digit.

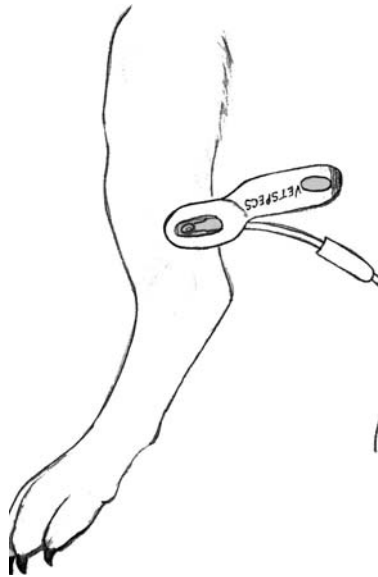
Do not place the leg/toe sensor on the tongue. Applying the leg/toe sensor to the tongue will cause vasoconstriction, resulting in inaccurate readings.



Sketch 1: The Leg/toe sensor on a distal leg of cats or small dogs.



Sketch 2: The leg/toe sensor on a paw of cats.



Sketch 3: The leg/toe sensor on the Achilles tendon of dogs.



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

3. Watch the pulse waveforms

After the sensor has been placed on the patient for a few seconds, the waveform line will start to pulsate, and then a SpO₂ reading will be displayed.

The pulse waveforms are pulsating in synch with the heartbeats when the sensor is picking up valid arterial pulsations. The SpO₂ 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 the sensor is connected to the Capno-40.

Possible causes and corrective actions:

A wire inside the sensor was broken.

The sensor needs to be replaced.

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.

III. Operational instructions

Push the POWER switch on the back to turn on or off the Capno-40.

Turning on the power while pushing and holding MENU key makes the Capno-40 enter into its demo mode, in which all information displayed on the screen is generated from internal

computer, not registered from the patient. **Do not turn on the power while push and hold MENU key.**

3.1 Control panel

MENU

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



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

TREND

Push this key to display trends of PR, SpO2, RR, CO2, and temperature.

One hour of trends are displayed. When more than one hour of trends is recorded, push ↑ or ↓ key to change pages.

FREEZE

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

SOUND

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

3.2 Menu system

MENU

Push MENU key to display main menu as below.

SPEED: 50
CO2
PR
SPO2
SETUP
ESC

The Capno-40 features two waveform speeds, 50 mm/s (default) and 25 mm/s. To change the waveform speed,

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

CO2

In the main menu, push ↑ or ↓ key to select CO2, and then push MENU key to display the CO2 submenu as below:

UNIT: mmHg
HI: 50
LO: 20
ALM: ON
SPEED: SLOW
SOUND: ON
ESC

1. CHANGE CO2 UNIT

The end-tidal CO2 can be expressed as mmHg (default) or percentage. The user can select one of the two units and set it as default. To change the unit,

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

2. CHANGE CO2 ALARM LIMITS

- Select the item to be changed, push MENU key to highlight in red,
- Push ↑ or ↓ key to change the number, and then push MENU key to set.

3. CHANGE CO2 ALARM SETTING

The alarm setting for end-tidal CO2 is ON as default. To change the setting,

- Select ALM: ON, and then push MENU key to change to OFF.

4. CO2 WAVEFORMS SPEED

The CO2 waveforms have two speeds: slow (12.5 mm/s, default) and fast (the same speed as the pulse waveforms). To change CO2 waveform speed,

- Select SLOW, and then push MENU key to change to FAST.

5. RESPIRATORY SOUND

The Capno-40 features a digital respiratory sound. The respiratory sound can be set ON or OFF as default. To change the setting,

- Select OFF or ON, and then push MENU key to change.

PR

In the 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.

3.3 Save information

Plug the USB flash drive to the USB port labeled DDC on the back of the Capno-40.

NO DISK is indicated when the USB flash drive is not plugged in. DISK READY is indicated when the USB flash drive is plugged in.

Each time the USB flash drive is plugged in, or the Capno-40 is powered on while the USB flash drive is plugged in, the Capno-40 will automatically create a new folder on the USB flash drive. The new folder will be named PET01, PET02, PET03 or PET20. The trends stored in the internal memory of the Capno-40 will be erased, making it ready for the new patient. Up to 20 folders can be stored on one USB flash drive, as shown below.



The Capno-40 will automatically save, on the USB flash drive, information on the screen of the moment (screen capture), as well as the trends recorded up to the moment, every five minutes and when an alarm is triggered for one of the parameters. In other words, for a monitoring, a number of screen captures and one page of trends up to 4 hours, which is updated each time the unit makes a screen capture, will automatically be saved in the folder created for the patient.

Upon pushing FREEZE key, the Capno-40 will also save on the USB flash drive a screen capture, as well as update the trends page saved on the USB flash drive.

3.4 Transfer saved information to your PC

1. Install the data management program

Insert the software CD into a CD drive on your PC, and open the CD. You will see a folder named “VetSpecs Capno-40”. To install the data management program on your PC, simply copy the “VetSpecs Capno-40” folder from the CD to the hard drive of your PC.

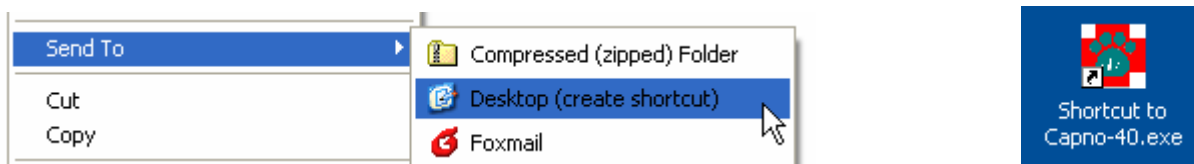


A. Create a shortcut

It is highly recommended to create a shortcut for the program on the desktop. Double click the “VetSpecs Capno-40” folder on the hard drive to open the folder. The following files are in the folder.



Place the cursor on the “Capno-40.exe” icon, and then click the right button on the mouse. In the pop-up menu, go to Send to and Desktop (create shortcut). A shortcut to Capno-40.exe appears on the desktop.



B. Create a master folder

Before you transfer any data to the PC, establish a new folder on the hard drive of the PC to be the master folder for storing all patient data recorded by the Capno-40. You may name the master folder “My Capno-40 Data”.



2. Copy data to the hard drive

Remove the USB flash drive from the Capno-40, 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.

Copy all data folders stored on the USB flash drive to the master folder (or a folder inside the master folder).

You must rename all these data folders after they were copied to the master folder. Otherwise, you will have a problem next time you copy data from the USB flash drive to the master folder, because the folders with the same names already existed in the master folder.

You should rename these data folders in a way that they can be identified easily. For example, you may rename them with patient ID numbers, such as 100001, 100002, 100003, 100004, and 100005.



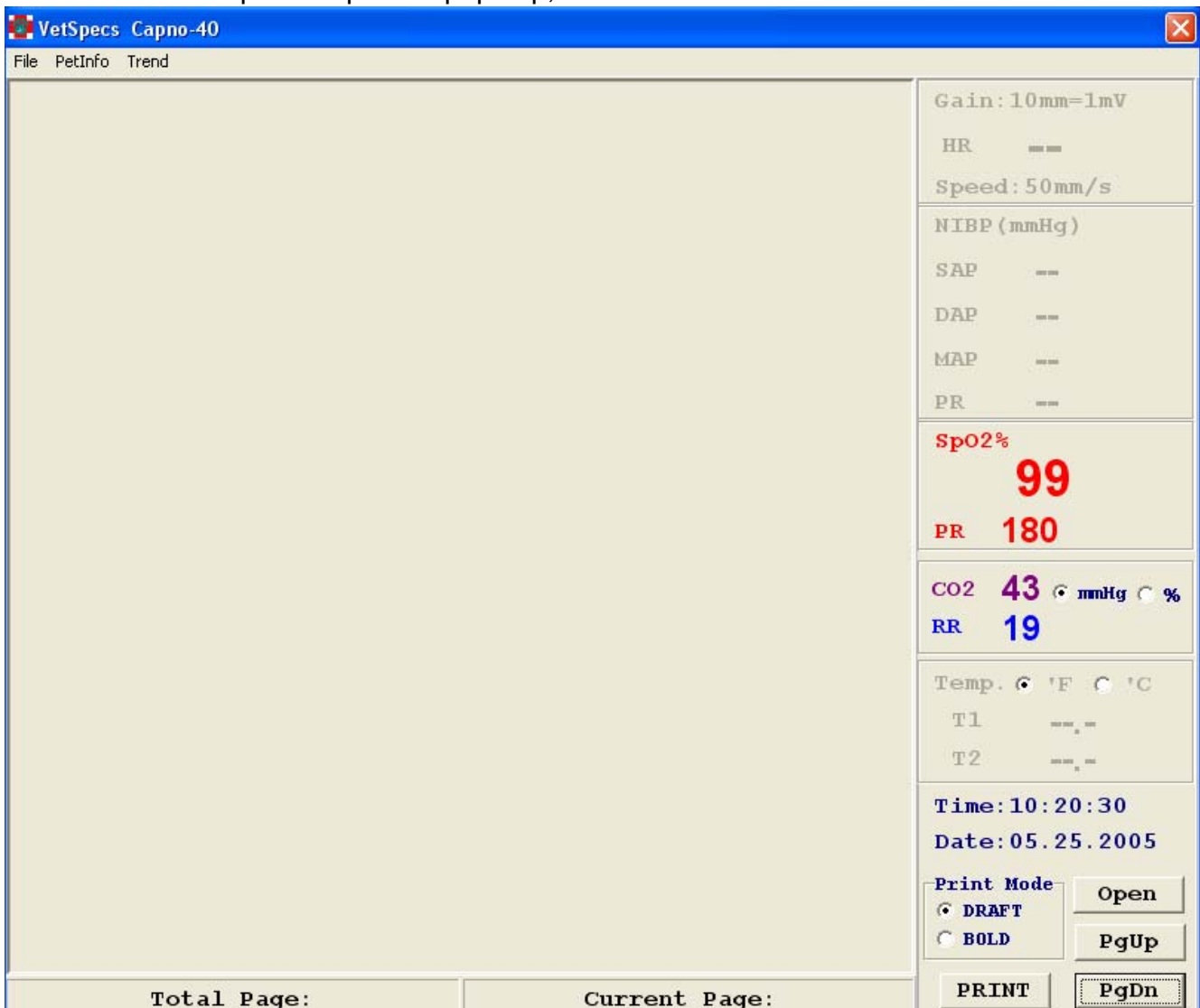
There can be multiple folders inside a patient's folder. For example, the data recorded on July 1, 2005 are stored in the folder "SM-07-01-05", while the data recorded on August 1, 2003 are stored in the folder "SM-08-01-03". Here SM means surgical monitoring.

In order to minimize any confusion, it is highly recommended that you copy all data files from the USB flash drive to the PC in the same day they were recorded, and then delete all files on the USB flash drive.

3.5 Review information on your PC

1. Open the program

Double click the icon “Shortcut to Capno-40.exe” on the desktop to open the program. A window titled VetSpecs Capno-40 pops up, as shown below.



You also can open the program by double clicking any one of data files in the folder.

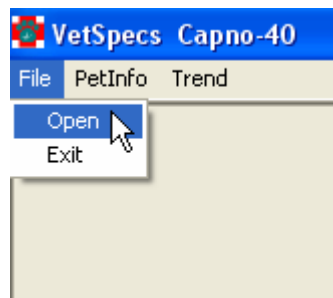
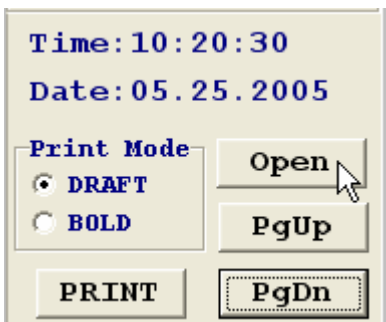


WAVE00.DAT, WAVE01.DAT, WAVE02.DAT, and WAVE03.DAT are screen captures, as shown on page 24. TREND.DAT is the trends page, as shown on page 25. They were named automatically by the Capno-40. Only the sequence number in the file name can be changed.

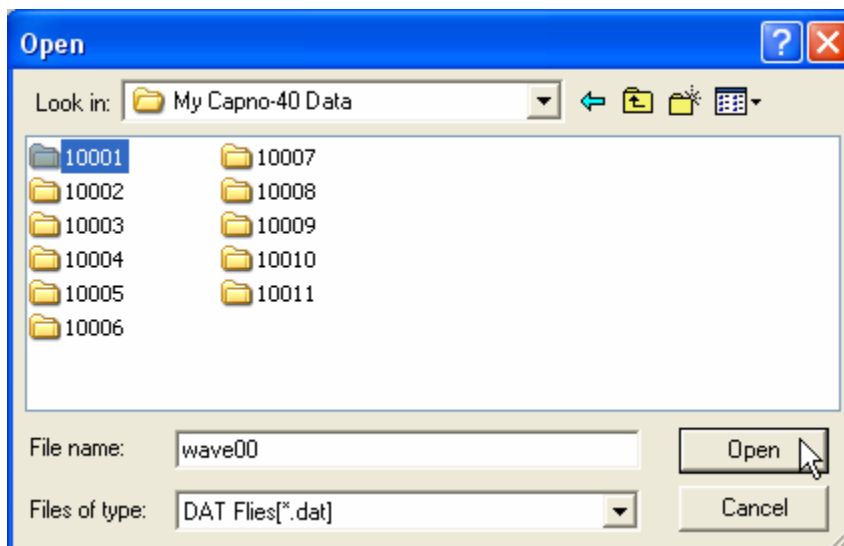
For example, if you deleted the file WAVE01.DAT, you can change the file WAVE02.DAT to WAVE01.DAT.

2. Review screen captures

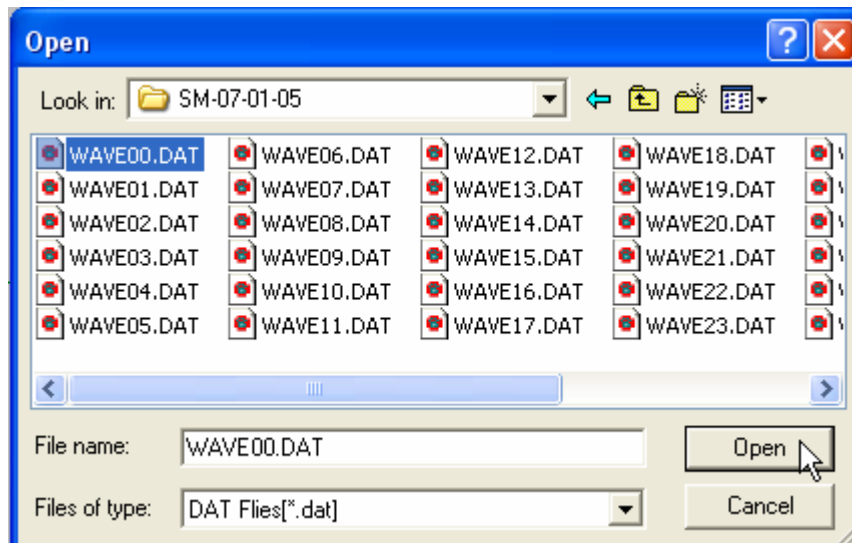
Click the **Open** button located at the lower right corner of the window, or click File menu and select Open, as shown below.



Go to the master folder, select the patient folder you want to open, for example 10001, and then click Open button, as shown below.



There may be multiple layers of folders inside the patient folder. You may need to repeat the above step multiple times to get to a specific data folder, for example SM-07-01-05. Select any one of the data files (screen captures) in the folder, and then click Open button.

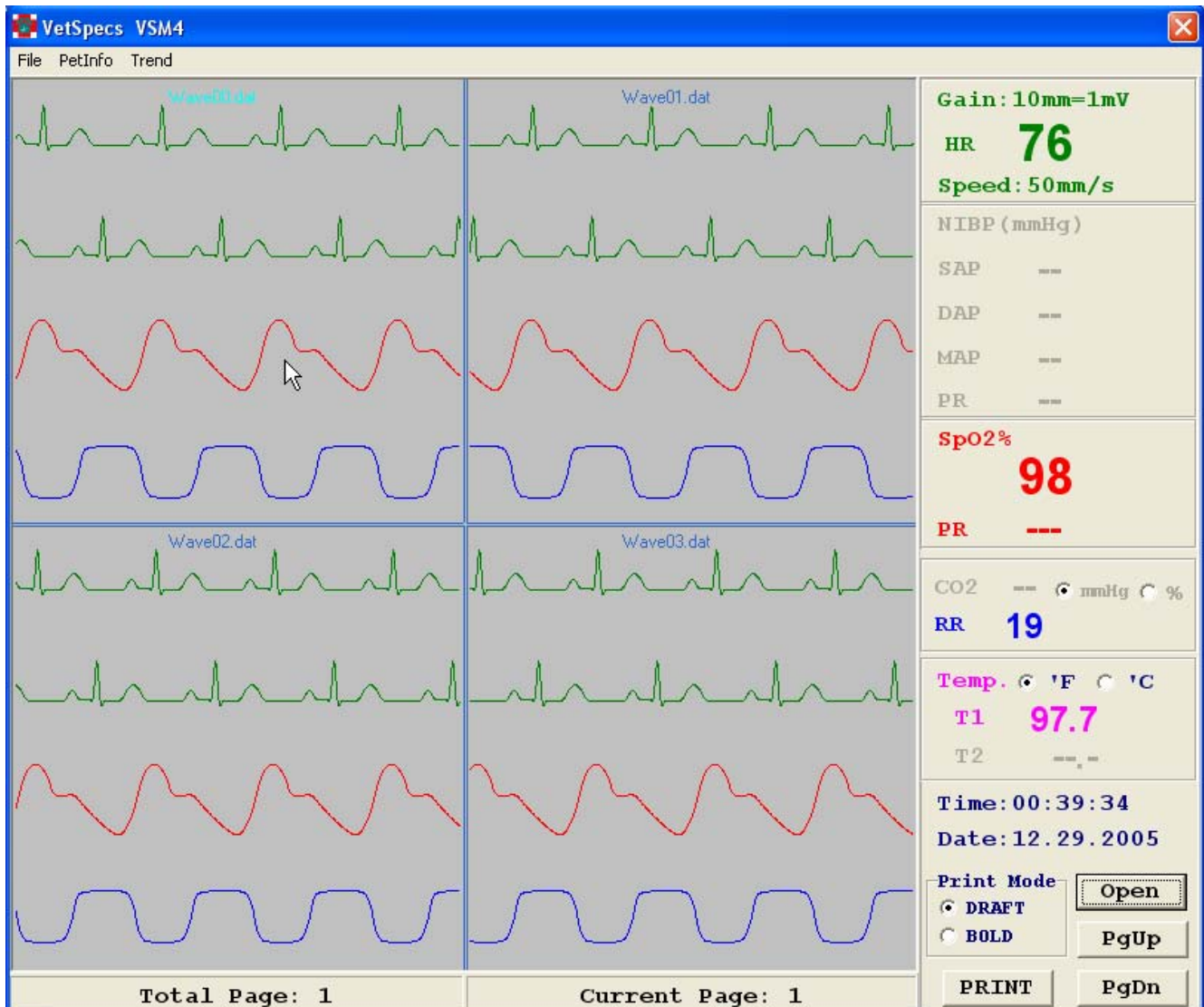


Four files with consecutive sequence numbers, for example Wave00.dat, Wave01.dat, Wave02.dat, and Wave03.dat, are displayed in one window, as shown below. The name of each file is indicated at top of each waveform area.

You can select any one of the four files by placing the cursor on the waveform area of the file and clicking the left key on the mouse. The readings displayed on the right side of the window correspond to the file being selected.

Click PgDn or PgUp button at the lower right corner of the window to change pages. To print a file (screen capture), select the file, and then click PRINT button at the lower right corner of the window. The screen capture will be printed out through the default printer of the PC.

You can delete a file by placing the cursor on the waveform area of the file and clicking the right key on the mouse.

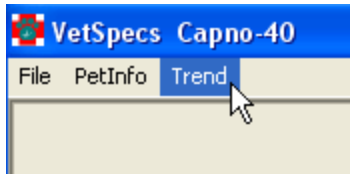


To display a file in the full window, place the cursor on the waveform area and then double click the left key on the mouse. The selected file will be displayed in the whole window, as shown below.

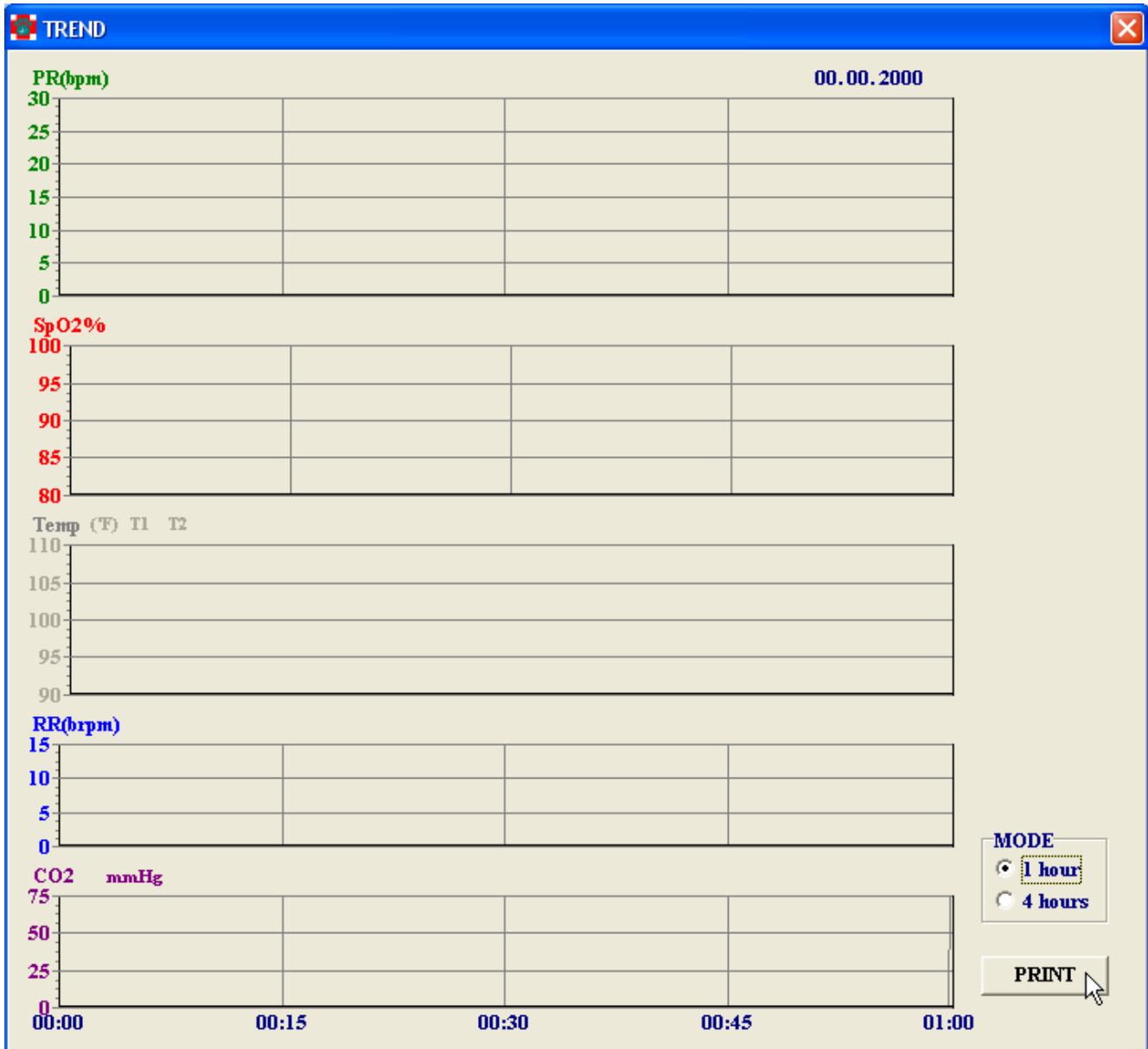
To go back to the four-file display format, double click on the waveform area in the window below.

3. Review the trends

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



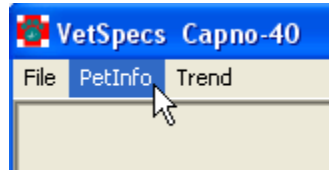
The TREND window pops up, as shown below.



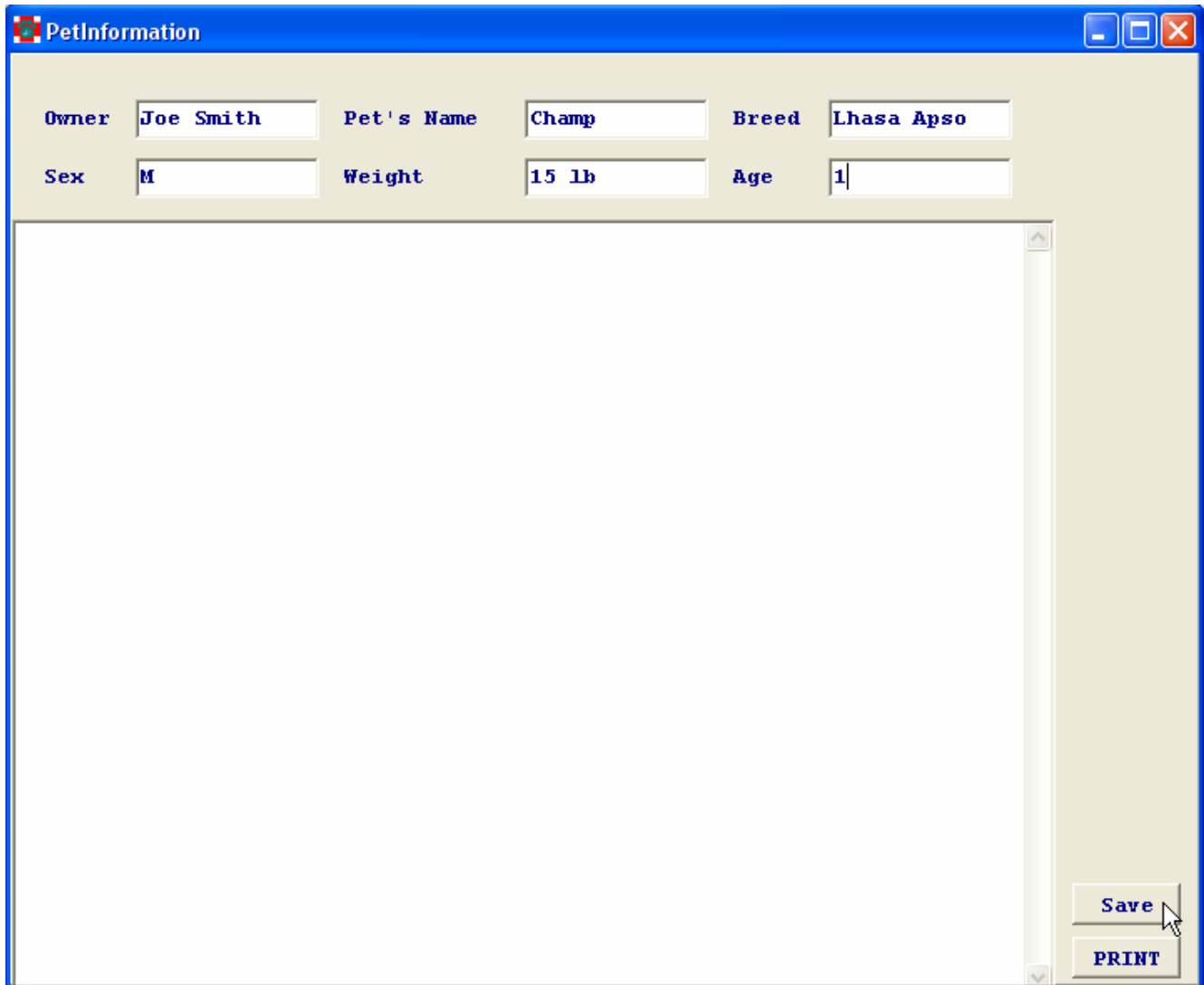
To print, click PRINT button. The Trends will be printed out through the default printer of the PC.

4. Input patient information

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

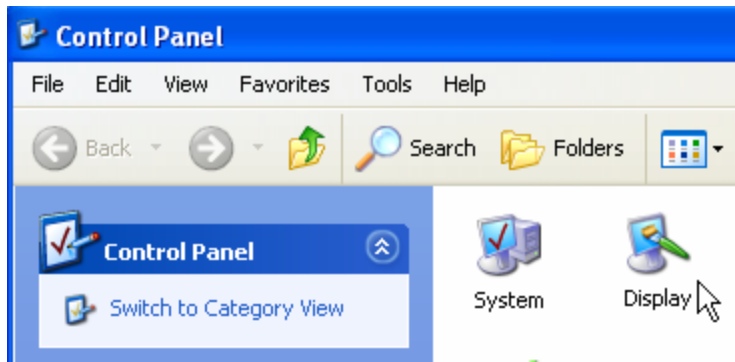


The PetInformation window pops up, as shown below. Type in patient information and/or comments, and click Save button. You can upgrade the information any time you want.

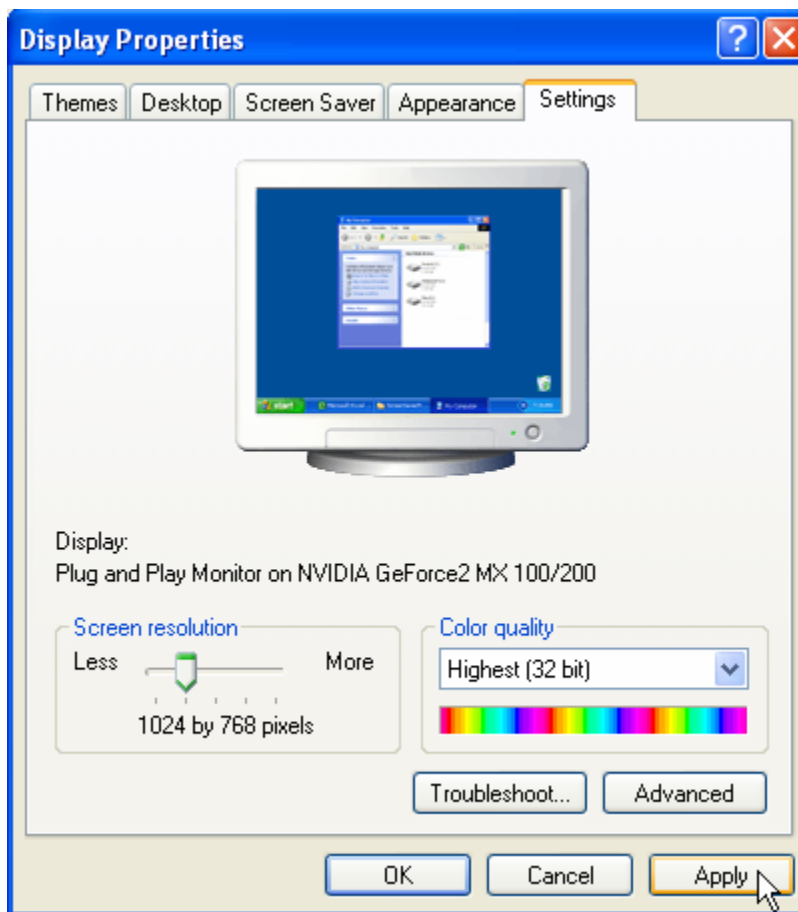


5. Adjust screen resolution

If the WAVE window is partially out of the screen, the screen resolution setting on the PC is too low to display the entire window. You need 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.



IV. Maintenance

Do not use a rough or dirty cloth or towel to clean the screen as it may produce scratches. If necessary, only use soft tissue paper wet with a little bit of liquid cleaner to clean the screen. Clean the outside of the Capno-40 with a soft cloth.

The SpO2 sensors can be cleaned with a towel wet with liquid cleaner.

Do not wash the CO2 sensor or immerse it in liquid. The airway adapters can be washed if necessary. Only use soft tissue paper to wipe the airway adapter. Make sure not to scratch the two windows on the airway adapter.

Clean the esophageal and rectal temperature probes with a towel wet with liquid cleaner, and if necessary, wash the distal portion of the probes. However, make sure that no liquid enters the probe through its connector which is not waterproof.

Do not steam or autoclave any accessories. Do not modify any accessories. Do not use any Capno-40 accessories on any other monitors not made by VetSpecs. Never use on the Capno-40 any cables or sensors that were not provided by VetSpecs. Never have the Capno-40 serviced by any unauthorized person. Warranty for the Capno-40 would automatically be voided if any of the above occurred.

V. Specifications

Screen:	6" 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 and 50 (default) mm/s
RR Range:	0 - 150 brpm
CO2 Range:	0 - 100 mmHg or 0 - 10%
PR Range:	0 - 400 bpm
SpO2 Range:	0 - 100%
Temperature Range:	85° F - 113° F

VI. Accessories

One CO2 module, one large airway adapter, one small airway adapter, one SpO2 lingual sensor, one SpO2 leg/toe sensor, one USB flash drive, one USB extension cable, one Capno-40 Data Management software CD, one power cord, and one User's Manual.

Ordering accessories

To order accessories, please call **0800-197-2998** or visit **www.VetSpecsEU.com**.

VII. Technical support

For technical support, please call **0800-197-2998**. If the Capno-40 unit or its accessories need to be serviced, please ship them to:

VetSpecs Europe Co., Ltd.
Capital Business Centre, Unit 95, 22 Carlton Road, South Croydon,
Surrey, CR2 0BS, United Kingdom
Phone: 020-8916-2072, Fax: 020-8916-2073

Limited Warranty

VetSpecs, Inc. ("VetSpecs") warrants the VetSpecs® Capno-40 ("the Capno-40") 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 Capno-40 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 Capno-40, or use of the Capno-40 in a manner for which it was not designed, or by cause external to the Capno-40.

The CO2 module is covered by a one-year limited warranty. The extension cables are covered by a one-year limited warranty. The SpO2 sensors, esophageal temperature probe, and rectal temperature probe are covered by a 6-month limited warranty. The airway adapters are covered by a 90-day limited warranty. The Capno-40 data management software (for PC) is covered by a life-time replacement 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 Capno-40. VetSpecs' liability arising out of the manufacture, sale or supplying of the Capno-40 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 Capno-40. 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 Capno-40. 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.