

User's Manual

Vetcorder Pro



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EVERY PATIENT EVERY TIME

1. The Basics

This manual contains the instructions necessary to operate the product safely and in accordance with its function and intended use. Observance of this manual is a prerequisite for proper product performance and correct operation and ensures user and operator safety.

1.1 Safety

Warnings and Cautionary Advice

- Before using the device, please ensure that you have read this manual thoroughly and fully understand corresponding precautions and risks.
- The data and results displayed on the device are for reference only and cannot be directly used for diagnostic interpretation or treatment.
- Do not use this device with a defibrillator.
- Do not use this device during MRI examination.
- Do not use the device in a combustible environment (i.e., oxygen-enriched environment).
- Never submerge the device in water or other liquids. Do not clean the device with acetone or other volatile solutions.
- Do not drop this device or subject it to strong impact.
- Do not place this device in pressure vessels or gas sterilization device.
- Do not dismantle the device, as this could cause damage or malfunctions or impede the operation of the device.
- Do not allow the electrodes to contact other conductive parts (including the ground).
- Do not store the device in the following locations: locations in which the device is exposed to direct sunlight, high temperatures or levels of moisture, or heavy contamination; locations near to sources of water or fire; or locations that are subject to strong electromagnetic influences.

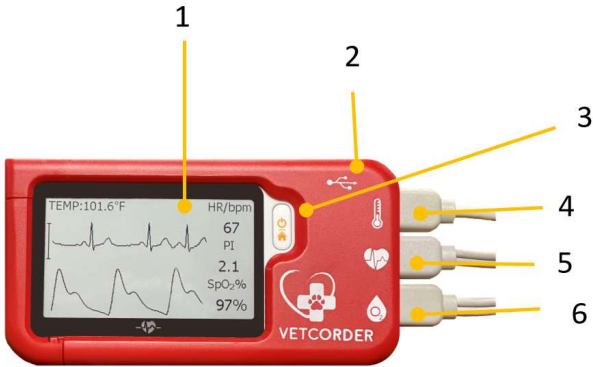
2. Introduction

2.1 Intended Use

The Vetcorder Pro Multi-Parameter Monitor is intended to be used for the measuring, displaying, reviewing, and storing of multiple physiological parameters including ECG, pulse oxygen saturation (SpO₂), perfusion index (PI), pulse rate and internal temperature. It is not intended for use on humans.

2.2 About

Vetcorder



1. Touch Screen

Use the pad of your finger to tap or swipe the touch screen. Do not use your fingernail or any other object to tap the screen.



2. Charging Connector Port

3. Home, Power On/Off

- When the monitor is off, press this button to power it on.
 - When the monitor is on, press and hold it for 2 seconds to turn it off.
 - During operation, pressing this button will switch to Main Screen, or Calendar Screen, or return to Home Screen.
4. Temperature Probe Connector Port
 5. ECG Connector Port
 6. SpO2 Connector Port



7. Speaker
8. Serial Number

2.3 Main Screen

The Main Screen is shown as below. Swiping your finger from right to left can switch to the second page, and vice versa. Pressing a button in the Main Screen will start a measurement, activate a function, or open corresponding menu.



2.4 Calendar Screen / Standby Mode

The device will enter Calendar Screen / Standby Mode when:

- No operation is detected for 120 seconds in other screen interface, the device will automatically switch to the Calendar Screen.
- Pressing the Home button will return you to the Main Screen.



1. Current time
2. Current date

You can change the current time and date by going into the Settings menu. Please refer to **Section 5.1** for details.




3. This arrow indicates Users to press the Home button to exit the Calendar Screen / Standby Mode.
4. Battery indicator

When the device enters Calendar Screen, it also begins to work in Standby Mode, which is an ultra-low power consumption mode. In Standby Mode, the touch screen operation will not function.

2.5 Result Screen





This device provides powerful measurement functionalities, including Daily Check, ECG, Oximeter, and Internal Thermometer. For each measurement, a Result report will be provided after the measurement is finished. An example is shown as below.



1. Measured parameters and readings.
2. Trash, replay, and back buttons.
 - Select  to move recording to trash
 - Select  button to re-record.
 - Press  button to go back to the readings screen.

In the Result Screen, if there is no operation for 2 minutes, the device will automatically return to Standby Screen.

2.6 Symbols

Symbol	Meaning
	Manufacturer
CE0197	In conformity with Directive 93/42/EEC
	Symbol for "ENVIRONMENT PROTECTION – Waste electrical products should not be disposed of with household waste. Please recycle where facilities exist. Check with your local authority or retailer for recycling advice".
IP22	Against ingress of solid foreign objects $\geq 12.5\text{mm}$ diameter, Against dripping (15° tilted)
	Follow operating instructions
	Caution or warning that requires special attention.

3. Getting Started

3.1 Unpacking

Before unpacking, examine the packing case carefully for signs of damage. If any damage is detected, contact your distributor or Sentier. If the packing case is intact, open the package and remove the equipment and accessories carefully. Verify all materials are present and check for any mechanical damage. Contact Sentier in case of any problem at 844-VETCORDER.

Warnings and Cautionary Advice

- Save the packing case and packaging material as they can be used if the device must be reshipped.
- Register your warranty at www.sentierconnect.com. You will then be notified via email of any software updates etc.
- When disposing of the packaging material, be sure to observe waste control regulations and keep it out of the reach of children and animals.
- The equipment might be contaminated during storage and transport. Before use, please verify whether the packages are intact, especially the packages of single use accessories. In case of any damage, do not use. Contact Sentier at 844-VETCORDER for assistance.

3.2 Power On/Off

Press the Power On/Off button to power on the device. Press and hold Power On/Off button for 2 seconds from the main menu to power off the device.

3.3 Initial Settings

The first time when the Vetcorder is powered on, you can set up your Vetcorder monitor step by step. You can also change the settings in the <Settings> menu.

3.4 Turning On/Off Bluetooth

The Vetcorder Pro has built-in Bluetooth wireless connectivity, which enables exporting measured records from the device to mobile devices using Bluetooth protocol.

- To turn on the Bluetooth: press the Home button to enter Main Screen.
- Swipe your finger from right to left to switch to the second page and go to SETTINGS.
- On that menu you will swipe your finger up to scroll down or use the arrow on the lower right of the screen.
- Find the Bluetooth line item and toggle the switch to the right by tapping it – when the circle in that is on the right side the Bluetooth is on and when that circle is on the left the Bluetooth is off.

You can exit this menu by using the X in the upper right corner or by using the home button to return to the starting screen.

4. Using Vetcorder

4.1 Prior to Use

Warnings and Cautionary Advice

- Use only cables, electrodes, sensors, and other accessories specified in this manual.
- The device has no alarms and will not sound if the measurement reading is too low or too high.

Before using ECG

Proper electrode placement is required to get accurate ECG readings. Places where leads attach to the body must be prepared correctly to ensure the best possible contact. Dogs and cats usually have enough electrolyte material on their skin and hair so that merely moistening lead sites with 70% isopropyl alcohol is

appropriate. This will usually be sufficient for ECG recording/monitoring for a short time (30 to 60 minutes), depending upon the relative humidity. Alcohol may need to be reapplied during longer procedures. For pets with a dense undercoat, you may need to use the blue clips that have been provided to assure the leads have contact with the skin.

Warnings and Cautionary Advice

- When connecting external electrodes, make sure that the connectors are attached to the Pet, to prevent them from contacting conductive parts or earth.
- If using the ECG for long-term monitoring, periodically inspect the electrode application site to ensure skin quality. If the skin quality changes, replace the electrodes, or change the application site.
- Do not use this device during defibrillation.
- Interference from a non-grounded instrument near the animal / patient and electro surgery interference can cause problems with the waveform.
- The QRS algorithm has been tested for accuracy by the QRS segment data. Inadequate QRS segment levels or distortion will require heart rate verification by a clinician.

Before using Pulse Oximeter

Before using Daily Check or Pulse Oximeter function, pay attention to the following points to obtain precise measurements.

- The area where the SpO₂ sensor is attached must be clean to ensure proper reading.
- Any of the following conditions may cause inaccurate measurements, including but not limited to:
 - Flickering or very bright light
 - Poor blood circulation
 - Low hemoglobin
 - Hypotension, severe vasoconstriction, severe anemia, or hypothermia
 - Injection of intravascular dyes.
- The Pulse Oximeter may not work if the Pet has poor

circulation. Rub the skin or use heat to increase circulation or place the SpO₂ sensor in another location.

- The Pulse Oximeter measures oxygen saturation of functional hemoglobin. High levels of dysfunctional hemoglobin could affect the accuracy of the measurements.
- Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast towers, and TV broadcast towers may affect accuracy.
- The pleth waveform displayed on the device is normalized.

Warnings and Cautionary Advice

- Limit movement as much as possible when using the Daily Check or Pulse Oximeter. Failure to do so may result in incorrect reading or analysis.
- Do not use the Pulse Oximeter on the same paw/leg when using a blood pressure cuff or monitor.
- Do not use the Pulse Oximeter outside the specified operating and storage temperature ranges.
- DO NOT USE this device during MRI (magnetic resonance imaging).
- Prolonged continuous SpO₂ monitoring may increase the risk of undesirable changes in skin characteristics, such as irritation, reddening, blistering or burns.
- Check the SpO₂ sensor application site every 6-8 hours to determine the positioning of the sensor and the circulation and skin sensitivity of the animal. Sensitivity varies depending on medical status or skin condition. For animals with poor peripheral blood circulation or sensitive skin, inspect the sensor site more frequently.

4.2 Daily Check

About Daily Check

Warnings and Cautionary Advice

- Before using this function, please read the **Section 4.1**.
- When using Daily Check, please ensure you select the correct animal.

- To ensure better tracking of health status, it is strongly suggested that every Daily Check measurement is made at the same time period when the body is in the relative same situation. E.g., every morning or every night.

Daily Check measurement is a function that combines the measuring of ECG (Electrocardiograph) waveform, HR (heart rate), Pleth waveform, SpO2 (blood oxygenation) and PI (Perfusion Index). It takes a 30 second recording and provides a summary once completed.

When using the Daily Check function with more than one patient, you can create individual patient profiles. Before using the Daily Check measurement or reviewing the data, ensure that the correct patient is selected. Please refer to **Section 5.8** to know how to manage patients (labeled “Pet Management”).

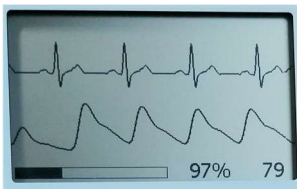
To better manage your patient’s health status, it is recommended to take Daily Check measurements at a regular interval. To ensure that you never forget to take a daily Check measurement, you can set a daily reminder. When the daily reminder event is triggered, the device gives audio alarm prompt, which will last for one minute if you do not cancel it manually. Please refer to **Section 4.5** to know how to set a daily reminder. NOTE: The reminder will not sound if the device is in ECG Recorder, Pulse Oximeter, Daily Check or Monitor Vitals mode.


Using Daily Check

To start a Daily Check, follow the steps as below.

1. If you have not created a Pet, then please follow the instruction in **Section 5.8** to add your Pet account.
2. Press the Home button to enter the Main Screen.
3. Tap the <**Daily Check**> icon in the lower right side of the screen.
4. Choose the Pet profile associated with the animal being checked.
5. Set up the device according to the instruction, keep the device at the same level as the animal’s heart and keep the animal

- still.
- Once the device detects a stable waveform, it will automatically start the measurement. The countdown bar moves from left to right.
 - When the bar is fully filled, the device will analyze your data and then show the measurement result.



Please refer to **Section 2.5** to understand the result screen. Daily Check provides the trending graph of heart rate and SpO2. To view the trend, select one record, and then tap the  button. For details, please refer to **Section 6.1**.

4.3 ECG Recorder

About ECG Recorder

Warnings and Cautionary Advice

- Before using this function, please read the **Section 4.1**.

QRS segment analysis is performed on selected LEAD.

Please keep your Pet stable and calm during the measurement. Movements may result in interference and incorrect readings or analysis result.

Measuring

To start an ECG Recorder measurement with cable,

- If the device is in Calendar Screen, press the Home button.

2. In the Main Screen, select <ECG Recorder>.
3. Choose ECG lead type I or II. NOTE: This selection does not alter the measurement but puts a note in the recording. Actual lead is based on where wires are placed on the patient.
4. Follow the instructions to connect the ECG cable and place the ECG electrodes.
 - Keep Pet calm
5. The display will then show your ECG waveform.



The device will monitor the animal's ECG continuously, however no data will be saved until you press the button.

6. Press the button to start collecting your ECG data. The countdown bar moves from left to right.
7. When the bar is filled, the device will analyze your data and then show the measurement result.



4.4 Upload Icon

The Upload feature may be used with the built-in Bluetooth wireless connectivity, to export measured records from the Vetcorder Pro to mobile devices.

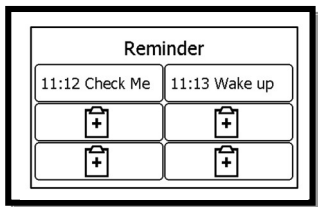
For instructions on how download and/or share an ECG or Daily Check recording, please visit <https://www.sentierconnect.com/>.

4.5 Reminder

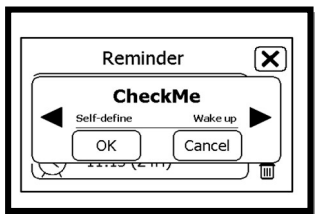
Up to 6 reminder events can be set by user. You can add, edit, and delete reminder events.

To add a reminder:

- In the second main screen, tap **<Reminder>** icon.
- In the **<Reminder>** menu, tap the + icon to add a reminder.



- Tap the first row to set the day or repeat interval. Tap the ◀ or ▶ button to change the setting.
- Tap the second row to set the event. You can define the event by selecting “Self-Define”. You can reach this by using the ◀ and ▶ buttons to scroll through menu.



- Tap the third row, set the time when the reminder is triggered, then tap ▶
- Tap ☑ to save this reminder.

To edit or delete a reminder, in the <Reminder> menu, choose the reminder which you want to edit or delete. Change the repeat interval, event, and/or time, then save the change by following the same procedure as adding a reminder. Tap the DELETE button, and then “yes” to delete a reminder.

4.6 Pulse Oximeter

About Pulse Oximeter

⚠ Warnings and Cautionary Advice

- Before using this function, please read the **Section 4.1**.

The Pulse Oximeter measures the amount of oxygen in the blood, pulse rate and perfusion index. The SpO₂ sensor works by transmitting red and infrared light through the skin to the small blood vessels or capillaries, reflecting the amount of oxygen in the blood and displaying the measurement on the screen. The oxygen saturation (SpO₂) is measured and displayed as a percentage of full capacity. Pulse rate (PR) and perfusion index (PI) will also be measured and displayed. The Perfusion Index is a relative assessment of the pulse strength at the monitoring site.

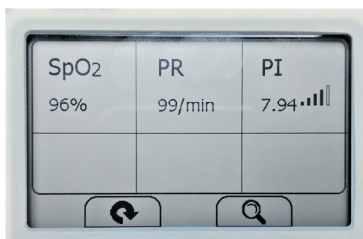
Measuring

1. Connect the external SpO₂ sensor to the Vetcorder Pro Monitor.
2. Attach the external SpO₂ sensor to your Pet.
3. If the device is in Calendar Screen, press the Home button.
4. Tap the <**Pulse Oximeter**> icon.
5. The display will then show your PLETH waveform, SpO₂ and pulse rate.



The device will monitor continuously, however no data will be saved until you press the ► button.

6. Press the ► button to start collecting your SpO₂ data. The countdown bar moves from left to right.
7. When the bar is filled, the device will analyze your data, and show the measurement result.



Please refer to **Section 2.5** to understand the result screen.

4.7 Internal Temperature

About temperature probe

Warnings and Cautionary Advice

- The thermometer is only designed for the measuring core temperature via the esophagus or the rectum. It is recommended to use the probe in one area on the animal and mark probe exclusively for use in that area.
- Before each use, check that the probe is intact. If it is damaged, do not use, please contact your distributor or Sentier.
- Holding the device in your hand or carrying it in a pocket can cause the device to warm up, which may result in incorrect readings.

Monitor will measure temperature between 50 °F to 122 °F (10 °C to 50 °C)

Influences on temperature include but not limited to

- Individual metabolism
- Age
- Environmental temperature
- Time of day
- Activities

Taking Temperature Measurement

To start a temperature measurement,

- If the device is in Calendar Screen, press the Home button.
- In the Main Screen, select <Thermometer>.
- Insert probe
- In Temperature Mode readings will display as seen below.
- The Temperature will display in the upper left corner of the screen in Monitor Vitals.



Please refer to **Section 2.5** to understand the result screen.

4.8 Monitor Vitals

About Monitor Vitals

Warnings and Cautionary Advice

- Before using this function, please read the **Section 4.1**.

The Monitor Vitals feature on the Vetcorder allows for continuous monitoring of ECG, SpO₂, Temperature and Heart Rate. An audible “beep” can be heard whenever a heart rate is detected by the ECG. Up to 12 hours of battery life means you can monitor several patients from intake through recovery before recharging.

Continuous monitoring via Bluetooth with our mobile app (called Monitor Vitals) will allow you to monitor your patient from a distance while performing other tasks in the clinic. Please download Monitor Vitals on your Apple App or Google Play store.

To begin Monitoring Vitals,

- Connect the external SpO₂, ECG, and Internal Temperature

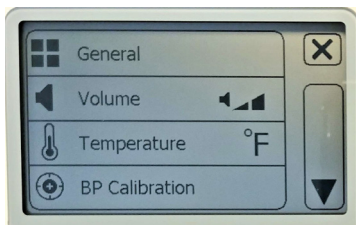
cable to the Vetcorder Pro Monitor.

- Attach the external SpO2 sensor and ECG clips to your Pet.
- Insert the Internal Temperature Probe rectally or esophageal.
- The display will show the continuous monitoring of ECG, SpO2, Temperature and Heart Rate.

5. Opening Settings Menu

To open the Settings menu,

1. Press the Home button to enter the Main Screen.
2. Tap the <Settings> icon to open the menu as below.

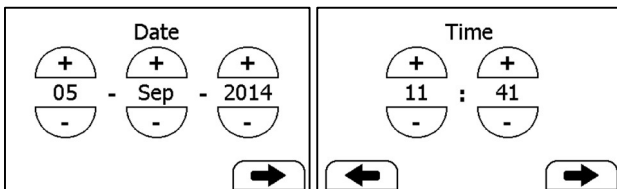


In the Settings menu, you can

- Tap ▲ and ▼ button to page up or down.
- Tap [X] to close the Settings menu.

5.1 Setting Date & Time

- In the Settings menu, choose <General>.
- Choose <Date & Time>.
- Tap “+” or “-” button to change the date, then tap ➡.
- Tap “+” or “-” button to change the time. (This is a 24HR clock)



- Tap **→** to finish the setting.

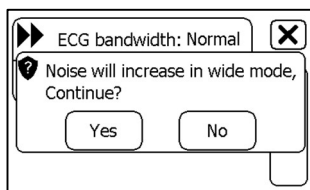
5.2 Changing ECG recording length

To change the length of ECG recording in ECG Recorder:

- In the Settings menu, choose **<General>**.
- Tap **<ECG Length>**, then choose among **<30s>**, **<60s>** and **<90s>**.
- Tap **<OK>** to enable the change.

5.3 Setting ECG Bandwidth

- In the Setting menu, choose **<General>**.
- Tap the **<ECG bandwidth>** to change between **<Normal>** and **<Wide>**.



5.4 Erasing Data

1. In the Setting menu, choose **<General>**.
2. Arrow down to **<Erase All Data>**, and then **<Yes>**.

All measurements saved in the device will be deleted.

5.5 Factory Reset

1. In the Setting menu, choose **<General>**.
2. Arrow down to **<Factory Reset>** and then tap **<Yes>**.

All measurements, Pet information and other settings saved in the device will be deleted, and the device will be restored to the factory default settings.

5.6 Changing Sound Volume

In the Settings menu, tap the <Volume> area to change volume directly. “X” means the volume is turned off.

5.7 Changing Temperature Unit

In the Settings menu, tap the <Thermometer> area to change between Celsius (°C) and Fahrenheit (°F).

5.8 Pet Management

If Daily Check measurement is used for more than one Pet, then each must have their own account.


To create a Pet account:

1. In the Settings menu, choose <Pet Management>.
2. Tap a “+” button to open the menu below.
3. Tap each area to edit corresponding information.
4. Tap to return the < Pet Management > menu.

To edit the information of a Pet:

1. In the Settings menu, choose <Pet Management>.
2. Choose the Pet that you want to edit.
3. Tap the information that you want to edit, and then modify.
4. Tap <OK> and to return the < Pet Management > menu.

To delete a Pet:

1. In the Settings menu, choose <Pet Management>.
2. Choose the Pet that you want to delete.
3. Tap the  button.
4. Choose <Yes> to confirm.

The <Guest> Pet cannot be edited or deleted.

5.9 Identify Software Version

Go to the <Settings> menu and arrow down to <About>.
Select <About> to identify the software version of your device.
Telling the version information when reporting a problem may help to identify and solve your problem.

5.10 Exporting Recordings

Vetcorder has built-in Bluetooth wireless connectivity, which enables exporting measured records to mobile phones and tablets running iOS or Android platform. After downloading the Vetcorder Connect app, follow these instructions to pair and send recordings to your mobile phone:

1. Tap the <**Upload**> icon, then the device will enter Bluetooth mode, and the screen will show the Bluetooth icon in the middle of screen.
2. On the mobile app, select your Vetcorder to pair, then navigate to your recording type to select and download recordings.

Note: Full instructions available at www.sentierconnect.com


6. Review

To open the Data Review menu

1. On second menu screen, tap the <**Review**> icon.
2. In Data Review, select icon of the records you would like to view.



6.1 Reviewing Daily Check

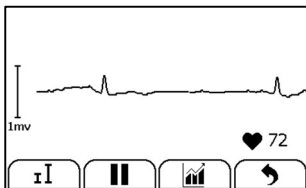
To review Daily Check records

1.  In the Data Review menu, select:
2. Choose the appropriate Pet or Guest to open the list as below, and then select one record to review more information as below.



In this menu, you can:

- Select  to delete this measurement.
- Select  to replay the ECG waveform as shown below.

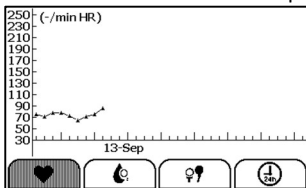


When the ECG waveform is being replayed, you can

- Select to change the waveform amplitude.
- Select to pause it.
- Select to return Daily Check list.

After the ECG waveform is replayed, it will automatically return to the previous interface.

- Select to view the trend of heart rate or SpO₂.



- Select to return to the Daily Check list.

6.2 Reviewing ECG Recorder

To review ECG Recorder records, in the Data Review menu, select . The operations you can perform are almost the same with Daily Check, however, there is no trending graph.

6.3 Reviewing Pulse Oximeter

To review Pulse Oximeter records, in the Data Review menu, select . The operations you can perform are the same as ECG Recorder.

6.4 Reviewing Thermometer

To review Thermometer records in the Data Review menu, select . The operations you can perform are the same as ECG Recorder, however, there is no waveform to replay.

7. Maintenance

Warnings and Cautionary Advice

- Call Sentier customer service if you think your device needs repair
- Do not perform your own maintenance on the Vetcorder; performing your own repairs will void the warranty.

7.1 Warranty


The Vetcorder is warranted to be free from manufacturer defects in materials and workmanship within the warranty period, which starts upon your date of purchase:


- 1-year warranty on the Vetcorder Monitor and Red Case.
- 6-month warranty on all Vetcorder Accessories.


7.2 Battery

This monitor is designed to operate on rechargeable Lithium-ion battery. The battery charges automatically when the monitor is connected to AC power or devices that can output electronic power through USB connector, such as personal computer and mobile battery bank etc.

On-screen battery symbols indicate the battery status as follow:

 The battery is fully charged.

 The solid portion represents the remained battery energy. If the solid portion moves from left to right, then it means that the battery is being charged.

 Indicates that the battery is almost depleted and needs to be charged immediately. If not charged the device will shut down automatically.

To charge the battery,

1. Connect the smaller end of the USB charging cable to the connector at top of monitor. The Vetcorder may not be used while charging.



2. Connect the other end of the USB charging cable to the USB charging port.
3. Please make sure that the LED is blue and press the Home button to enter the Main Screen, if needed.
4. When the LED turns to green, it means the battery is fully charged. Then you can unplug the USB cable.

Warnings and Cautionary Advice

- The device cannot be used for any measurement during charging.
 - Use charging adapter provided by manufacturer, or USB charging devices that comply with the standard of IEC 60950.
8. Clean the device weekly, carefully swabbing the device surface with a soft cloth or cotton swab with rubbing alcohol. Do not pour alcohol or spray anything directly onto or into the device. Do not submerge in any liquid.

Warnings and Cautionary Advice

- Call Sentier customer service if you think your device needs repairs.
- Do not perform your own maintenance on the Vetcorder; performing your own repairs will invalidate the warranty.

8.1 Trouble Shooting

Problem	Possible Cause	Solution
The device does not turn on.	1. The battery may be low. 2. The device might be damaged	1. Charge the battery and try again. 2. Please contact Sentier
Low battery indicator is blinking	The battery is low.	Charge the battery and try again.
The ECG waveform amplitude is small	The lead you chose is not suitable.	Change another lead and try again.
ECG waveform drifts	1. The pressure exerted on the electrode(s) is not stable or too much. 2. Leg or body may be moving.	1. Reattach electrode(s), hold the device stably and gently. 2. Try to keep animal perfectly still and test again.
The app cannot find the device.	The Bluetooth may not be turned on.	Turn on the Bluetooth on the second page of Main Screen.
“Error 4”	The SpO ₂ or ECG cable might be damaged.	Please contact Sentier
“System Error” occurred.	Software or hardware failure.	Restart the device and measure again. If the error persists, contact Sentier
No sound during ECG and SpO ₂ measurement.	The speaker is muted.	Unmute the speaker in the Settings menu.
Temperature value is too high or to low.	The temperature cable might be damaged	Please contact Sentier

9. Accessories

Warnings and Cautionary Advice

- Use accessories specified in this chapter. Using other accessories may cause damage to the device or not meet the claimed specifications.

Sentier Part #	Description
7100-1750	Vetcorder Veterinary Monitor System
7100-1602	Small Animal SPO2 Lingual Sensor (2 ft)
7100-1631	Small Animal SPO2 Lingual Clip
7100-1616	Small Animal ECG Cable (2 Ft Long)
7100-1604	Small Animal ECG Clips (Silver) - 2pcs
7100-1614	Small Animal ECG Clips (Blue) - 2pcs
7100-1605	USB Charging Cable, Micro D
7100-1606	USB Wall Charging Cube
7100-1610	Patient Extension Cable
7100-1633	Vetcorder Carrying Pouch
7100-1613	SPO2 Reflectance Sensor
7100-1640	Adaptor Plug Type I (AUS/NZ)
7100-1641	Adaptor Plug Type C (EU)
7100-1642	Adaptor Plug Type G (UK)
7100-1661	Large Animal Accessory Kit
7100-1664	Zumaya Exotic Electrode Kit (pair)

10. Specifications

Classifications		
EC Directive	MDD, 93/42/EEC	
	R&TTE, 1999/5/EC	
	ROHS 2.0, 2011/65/EU	
Degree protection against electrical shock	Type BF	
Environmental		
Item	Operating	Storage
Temperature	5 to 45°C	-25 to 70°C
Relative humidity (noncondensing)	10% to 95%	10% to 95%
Barometric	700 to 1060 hPa	700 to 1060 hPa
Degree of dust & water resistance	IP22	
Drop test	1.0 m	
Physical		
Size	88×56×13 mm	
Packing size	178*123*75 mm	
Weight	Less than 80 g (main unit)	
Display	Vetcorder: 2.7" touch screen, HD	
Connector	Micro D connector	
Wireless connectivity	Built-in Bluetooth dual mode, support 4.0 BLE	
Power Supply		
Charge adapter input	AC100-240V 50/60Hz	
Charge adapter output	DC5V 1.0A	
Battery type	Rechargeable lithium-polymer battery 560 mAh	
Battery run time	Only daily check: > 1000 times Continuous sleep monitoring: > 12 hours Pure standby calendar mode: > 3 months	
Charge time	Less than 2 hours to 90%	
ECG		
Lead type	Integrated ECG electrodes External ECG cable and electrodes	
Lead set	Lead I, lead II	
Measurement mode	Episode, continuous	
Sampling rate	500 Hz	
Sampling accuracy	16 bit	
Display Gain	1.25 mm/mV, 2.5 mm/mV, 5 mm/mV	

	10 mm/mV, 20 mm/mV
Sweep speed	25 mm/s
Bandwidth*	0.05 to 40 Hz
Electrode offset potential tolerance	±300 mV
HR measurement range	30 to 350 bpm
Accuracy	±2 bpm or ±2%, whichever is greater
ST measurement range	-0.5 to +0.5 mV
Measurement summary	Heart rate**, QRS duration, ST segment***, Rhythm analysis (Regular ECG Rhythm, High Heart Rate, Low Heart Rate, High QRS Value, High ST Value***, Low ST Value***, Irregular ECG Rhythm, Unable to analyze)
SpO₂	
Standards	Meet standards of ISO 80601-2-61
Measurement accuracy verification: The SpO ₂ accuracy has been verified in human experiments by comparing with arterial blood sample reference measured with a CO-oximeter. Pulse oximeter measurement are statistically distributed and about two-thirds of the measurements are expected to come within the specified accuracy range compared to CO-oximeter measurements.	
SpO ₂ range	70% to 100%
SpO ₂ Accuracy (Arms)	80-100%: ±2%, 70-79%: ±3%
PR range	30 to 250 bpm
PR accuracy	± 2 bpm or ± 2%, whichever is greater
PI range	0.5-15
Measurement summary	SpO ₂ , PR, PI, Summary (Normal Blood Oxygen, Low Blood Oxygen, Unable to analyze)
Thermometer	
Technique	Probe
Environment temperature	16.0 to 40.0 °C
Measurement site	Rectum
Measurement time	3s
Measurement range	34.0 to 42.2 °C (94.0 to 108.0 °F)
Accuracy	Accuracy +/- .4 °F (+/- .2 °C) With 1m extension cable +/- .6 °F (+/- .3 °C)
Review	
Data review	Graphic trend, list trend
Waveform review	Full disclosure waveform
Daily check	100 pcs of records without audio memo

ECG recorder	100 pcs of records without audio memo
Oximeter	100 pcs of records
Thermometer	100 pcs of records
Mobile APPS	
Operating system	IOS 7.0 or above, Android 4.0 or above
IOS Capability	iPhone 4s and models launched subsequently; iPad 3 and models launched subsequently
Android Capability	Mobile phone or pad with Bluetooth 2.1 or above
Functionality	Data export, data review, waveform replay, trend review, data sharing

* : External ECG cable, bandwidth mode set to wide

** : Heart rate is calculated based on average of every 5 to 30 QRS complex.

*** : Only for measurement with external ECG cable, bandwidth mode set to wide

11. Electromagnetic Compatibility


The device meets the requirements of EN 60601-1-2. All the accessories also meet the requirements of EN 60601-1-2 when in use with this device.

Warnings and Cautionary Advice

- Using accessories other than those specified in this manual may result in increased electromagnetic emission or decreased electromagnetic immunity of the equipment.
- The device or its components should not be used adjacent to or stacked with other equipment.
- The device needs special precautions regarding EMC and needs to be installed and put into service according to the EMC information provided below.
- Other devices may interfere with this device even though they meet the requirements of CISPR.
- When the inputted signal is below the minimum amplitude provided in technical specifications, erroneous measurements could result.
- Portable and mobile communication equipment may affect the performance of this device.
- Other devices that have RF transmitter or source may affect this device (e.g., cell phones, PDAs, and PCs with wireless function).

Guidance and Declaration - Electromagnetic Emissions		
The Vetcorder is intended for use in the electromagnetic environment specified below. The customer or the User of the device should assure that it is used in such an environment.		
Emission tests	Compliance	Electromagnetic environment - guidance
RF emissions CISPR 11	Group 1	The device uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class B	The device is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC61000-3-2	Class A	
Voltage Fluctuations / Flicker Emissions IEC 61000-3-3	Complies	

Guidance and Declaration - Electromagnetic Immunity			
The Vetcorder is intended for use in the electromagnetic environment specified below. The customer or the User of the Vetcorder should assure that it is used in such an environment.			
Immunity test	IEC60601 test level	Compliance level	Electromagnetic environment - guidance
Electrostatic discharge (ESD) IEC 61000-4-2	± 6 kV contact ± 8 kV air	± 6 kV contact ± 8 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30 %.
Electrical transient/burst IEC 61000-4-4	± 2 kV for power supply lines ± 1 kV for input/output lines	± 2 kV for power supply lines ± 1 kV for input/output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	± 1 kV line(s) to line(s) ± 2 kV line(s) to earth	± 1 kV line(s) to line(s) ± 2 kV line(s) to earth	
Voltage dips, short Interruptions and Voltage variations on power supply input lines IEC 61000-4-11	<5 % UT (>95 % dip in UT) for 0.5 cycle 40 % UT (60 % dip in UT) for 5 cycles 70 % UT (30 % dip in UT) for 25 cycles <5 % UT (>95 % dip in UT) for 5 s	<5 % UT (>95 % dip in UT) for 0.5 cycle 40 % UT (60 % dip in UT) for 5 cycles 70 % UT (30 % dip in UT) for 25 cycles <5 % UT (>95 % dip in UT) for 5 s	Mains power quality should be that of a typical commercial or hospital environment. If the User of our product requires continued operation during power mains interruptions, it is recommended that our product be powered from an uninterruptible power supply or a battery.
Power frequency (50/60 HZ) magnetic field IEC 61000-4-8	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
Note: U_r is the AC mains voltage prior to application of the test level.			

Guidance and Declaration - Electromagnetic Immunity			
The Vetcorder is intended for use in the specified electromagnetic environment. The customer or the User of the Vetcorder should assure that it is used in such an environment as described below.			
Immunity test	IEC60601 test level	Compliance level	Electromagnetic environment - guidance
Conducted RF IEC61000-4-6	3 Vrms 150 kHz to 80 MHz outside ISM bands	3 Vrms 150 kHz to 80 MHz outside ISM bands	Portable and mobile RF communications equipment should be used no closer to any part of the system, including cables, than the recommended separation distance calculated from the equation appropriate for the frequency of the transmitter. Recommended separation distances: $d = 1.2 \sqrt{P}$
Radiated RF IEC61000-4-3	3 V/m 80 MHz to 2.5 GHz	3 V/m 80 MHz to 2.5 GHz	Recommended separation distances: 80 MHz~800 MHz: $d = 1.2 \sqrt{P}$ 800MHz-2.5GHz: $d = 2.3 \sqrt{P}$ Where, P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in meters (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey ^a , should be less than the compliance level in each frequency range ^b . Interference may occur in the vicinity of equipment marked with the following  symbol:
<p>Note 1: At 80 MHz to 800 MHz, the separation distance for the higher frequency range applies.</p> <p>Note 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.</p>			
<p>^a Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the device is used exceeds the applicable RF compliance level above, the device should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the device.</p>			
<p>^b Over frequency range 150kHz to 80MHz. For Resp field strength should be less than 1V/m.</p>			

Recommended separation distances between portable and mobile RF communications equipment and the device

The Vetcorder is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the User of the Health Monitor can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the monitor as recommended below, according to the maximum output power of the communications equipment.

Rated max. output power of transmitter (W)	Separation distance according to frequency of the transmitter (m)		
	150 kHz - 80 MHz $d = 1.2\sqrt{P}$	80 MHz - 800 MHz $d = 1.2\sqrt{P}$	800 MHz - 2.5 GHz $d = 2.3\sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.20	1.20	2.30
10	3.80	3.80	7.30
100	12.00	12.00	23.00

For transmitters rated at a maximum output power not listed above, the recommended separation distance d in metres (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

Note 1: At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

Note 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

Vetcorder

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Version: A September 2021
PN: 7100-1710



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