CODA Monitor

User's Guide

Kent Scientific
CORPORATION

CODA Monitor

User's Guide

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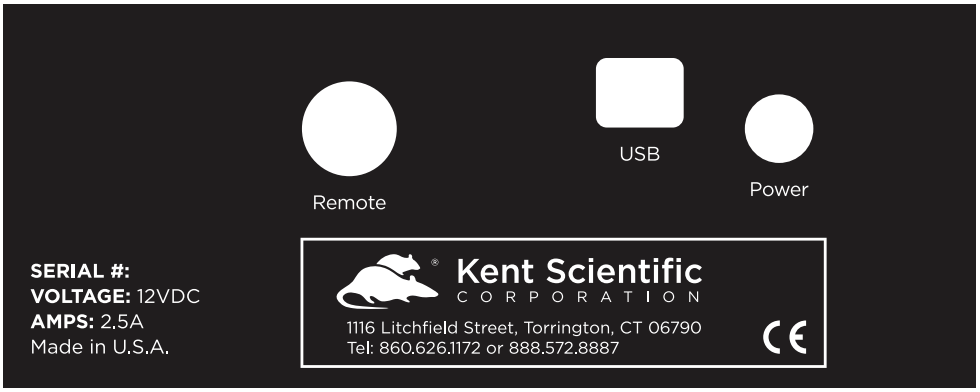
Introduction

The CODA Monitor is not designed, intended, or authorized for use in human applications.

System Components

Front Panel

Back Panel



About the CODA Monitor

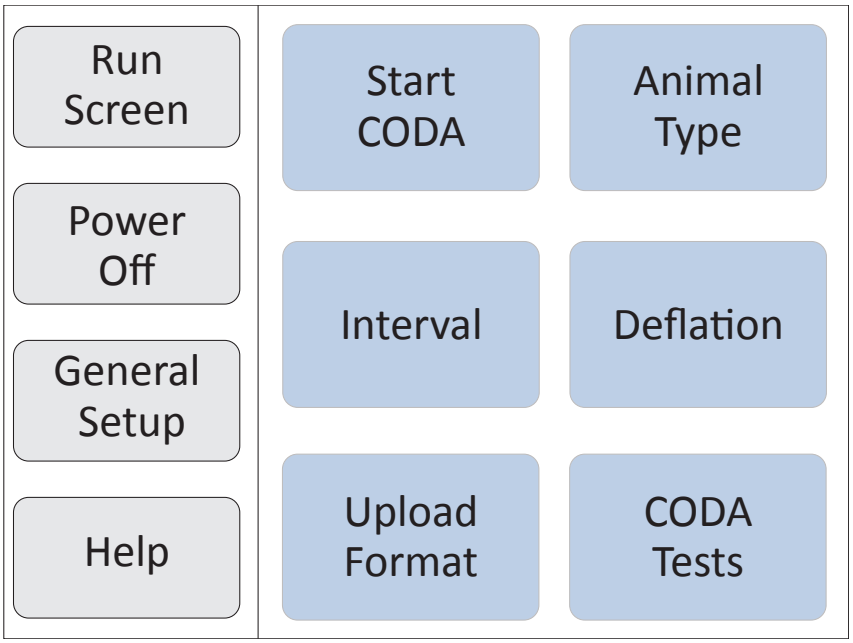
The Method

An occlusion tail cuff is inflated to impede blood flow within the animal's tail. The cuff is deflated slowly and a second tail cuff, incorporating the VPR sensor, measures the physiological characteristics of the returning blood flow. As the occlusion cuff deflates (represented by the red graph)and blood returns to the tail, the VPR sensor cuff measures the tail swelling (represented by the blue graph) that results from arterial pulsations from the blood flow. Systolic blood pressure is measured automatically at at a consistent rate of tail swelling. Diastolic blood pressure is measured automatically when the rate of swelling stops increasing in the tail.

Navigating the CODA Monitor

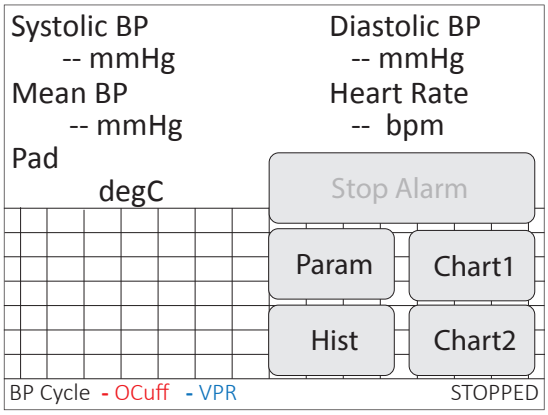
Touch Screen

CODA Monitor Touch Screens offer quick access to features and settings. Touch the upper half of the Run Screen to reach the first Touch Screen.



First Touch Screen
(Screen buttons may vary based on the modules installed.)

Touch the bottom half of the Run Screen to open the pop-up Display Menu and quickly scroll through charts, view other data or silence Alarms.



Pop-Up Display Menu
(Screen buttons may vary based on the modules installed.)

Dial Control

There are two Dials, A and B. The function of a Dial varies based on:

- where you use it – from the Touch Buttons Screens, Run Screen, Menu Screens or Main Menu.
- how you use it – turn, press or hold down.

Dials can have specialized uses in a few specific locations. The unit displays on-screen instructions in those locations.

ACTION	DIAL	RESULT
Press	A	Back one level from Main Menu Screens To Run Screen from Main Menu To Run Screen from Touch Button Screens
	B	Select a highlighted Menu item To Main Menu from Home Screen
		Clear Alarms if they are enabled
Turn	A	Move through Menu choices
	B	Change setting values at Menus
Hold down	A	To Main Menu from Run Screen To Help at any Menu screen
	B	—

See Main Menu on page 4.

Display Options

Customizing the Run Screen Display:

To configure Parameters:

1. Touch:
   1) the upper half of the Run Screen for the Touch Screen Menu.
   2) "General setup".
   3) "Config".
   4) "Param Locations".

2. Turn Dial A to choose a Parameter and Dial B to assign the Parameter to a Run Screen location.

To configure Charts:

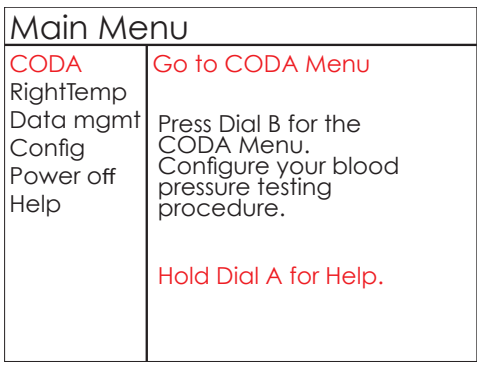
1. Touch:
   1) the upper half of the Run Screen for the Touch Screen Menu.
   2) "General setup".
   3) "Config".
   4) "Chart 1 setup" or "Chart 2 setup" to choose the type and timing for a chart.

2. Press Dial A to return to the General setup page of the Touch Screen Menu.

3. Touch "Set ranges" to choose the best-fitting axis range for the Parameters on your charts.

Menus

The Main Menu contains all features and settings for configuring the CODA Monitor, useful for instances when a touch screen is not a feasible option. Access the Main Menu through the Touch Screen Menu or from the Run Screen by holding Dial A.



Main Menu
(Screen buttons may vary based on the modules installed.)

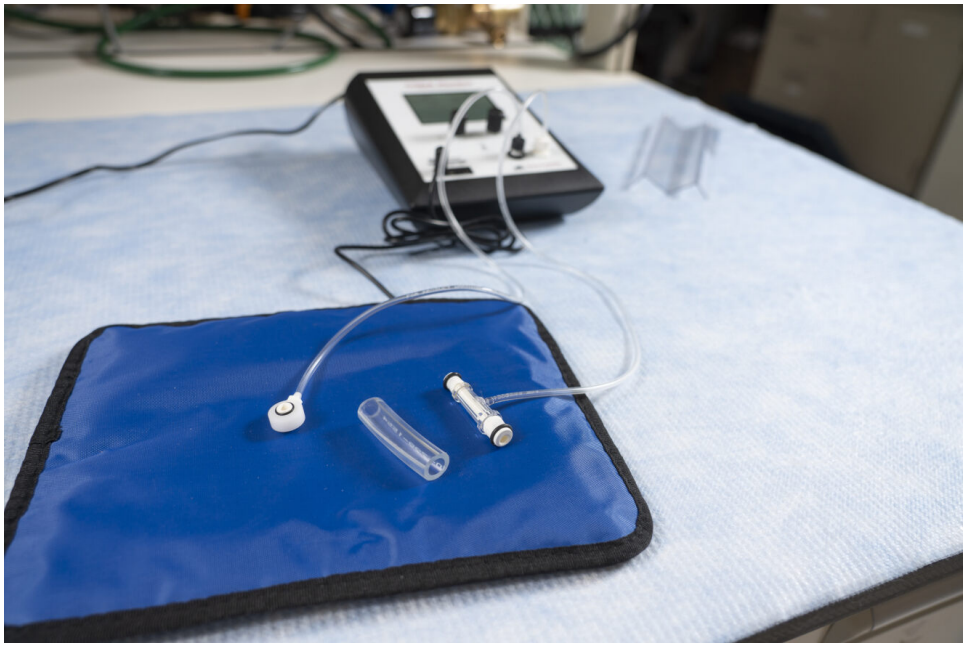
CODA Monitor

Set Up Hardware

Cuffs:

1. Attach the VPR cuff to the VPR port.

2. Attach the Occlusion cuff to the O-Cuff port.



Configure Settings

CODA Monitor Settings

1. Touch:

    1) the upper half of the Run Screen for the Touch Screen Menu.
    2) "Animal Type" to select the animal species.
    3) "Interval" to set the time between measurement cycles.
    4) "Deflation" to choose how long the cuff remains inflated.

> **Important: Select 15 seconds for large rats and 20 seconds for mice or rat pups.**

Connect the Animal

1. Place the animal in the holder if you are using it:

    1) Remove the rear gate of the animal holder.
    2) Adjust the nose cone to the front of the holder and tighten the screw.
    3) Place the animal into the holder. Allow the animal to enter the holder freely, using as little force as possible.
    4) Replace the rear gate, ensuring that the animal's tail extends beyond the end of the hatch.
    5) Adjust the nose cone so that the animal appears comfortable but movement is limited.

2. Place the animal on the infrared warming pad.

Warming is important! Remember to set up your RightTemp. See page 13.

Tip: Make sure the entire length of the animal's tail rests on the warming pad.

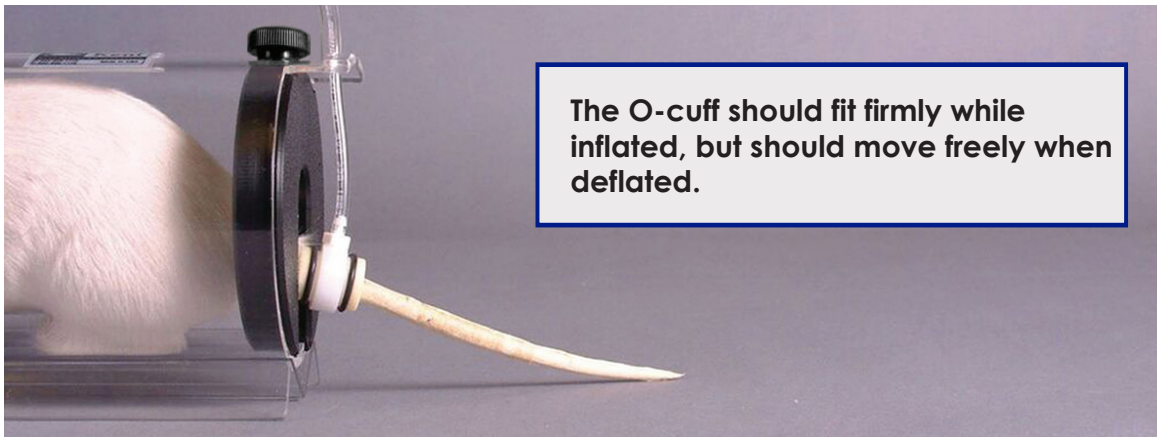
3. Position the cuffs on the animal's tail:

    - Place the O-Cuff first so that it is near the base of the tail. It should slide freely, but fit closely.

Slide the O-Cuff towards the base of the tail until you begin to encounter resistance. Do not force the cuff onto the tail.

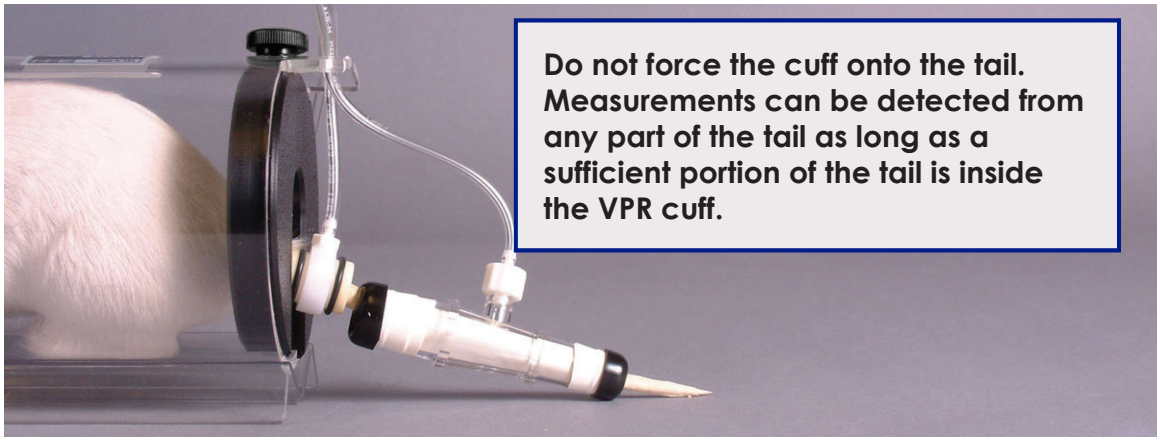
A properly fitting cuff moves freely and fits firmly during inflation. A cuff that is too tight compresses underlying blood vessels, resulting in poor blood pressure readings.

If a cuff feels tight or cannot reach the tail base, try using a larger O-Cuff. If the cuff slides up the entire length of the tail or fits loosely, try using a smaller O-Cuff.



O-Cuff placed on tail

- Slide the VPR cuff up the tail, with the larger diameter end first, until you reach the O-cuff.



VPR and O-Cuff placed on tail

4. Before you begin blood pressure measurements, measure the temperature at the base of the tail with the provided non-contact infrared thermometer. The tail temperature should be between 32 and 35C.

Note: Do not start the experiment if the tail temperature is below 32C. It may take several minutes for the animal's tail to reach the proper temperature.

5. Touch "Start CODA" to begin measurements.

Need help? How-To and Educational Training Videos are available on our website at *https://www.kentscientific.com/video-library/*

CODA Tips

CODA Tips
• Choose a warm, quiet room for blood pressure measurements. Avoid high-traffic or noisy locations.
• Blood pressures may vary throughout the day. If repeated measurements are necessary, schedule them for approximately the same time each day.
• Bladders can deteriorate over time. To prolong the life of the cuffs and bladders, store them in the provided storage case when not in use.
• If you are using an animal holder, ensure that the animal fits snugly. If the animal appears overly constrained, adjust the nose cone or use a larger-size holder.
• Training sessions may be beneficial for some animals. o If training is required, we recommend three to four 15-minute training sessions in the days prior to beginning your study.
• When you use the CODA in anesthetized animals, induce slowly and at the lowest possible dose to minimize the depressant effects of the anesthetic agents. o We strongly recommend inhalant anesthetics at low doses.
• Cuffs should be neither too tight nor too loose. If the cuffs feel tight, try using a larger size. Properly fitting cuffs will move freely and fit firmly during inflation. o The need for a larger O-Cuff does not necessarily mean a larger VPR sensor is required.
• Before beginning the experiment, verify that the animal's tail temperature is between 32C and 35C. o Do not start the experiment if the animal's tail temperature is less than 32C.
• Once the experiment has begun, refrain from manipulating the animals.

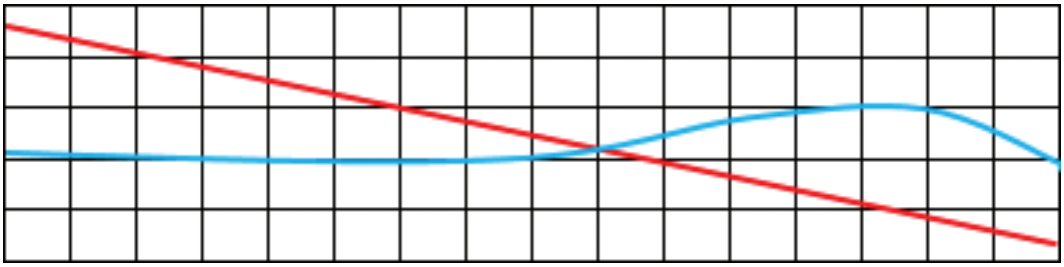
CODA Troubleshooting

Problem	Possible Cause	Solutions
No measurements are recorded.	Tail temperature is too low.	• Ensure that the base of the tail measures at least 32C.
	Cuffs are wrong size.	• Ensure that the cuffs are not too loose or too tight on the tail.
	Cuff bladders are leaking.	• Replace the cuff bladders.
Measurements are significantly higher than expected.	Cuffs are too tight.	• Use a larger cuff. • Slide the cuffs down the tail until they are no longer tight.

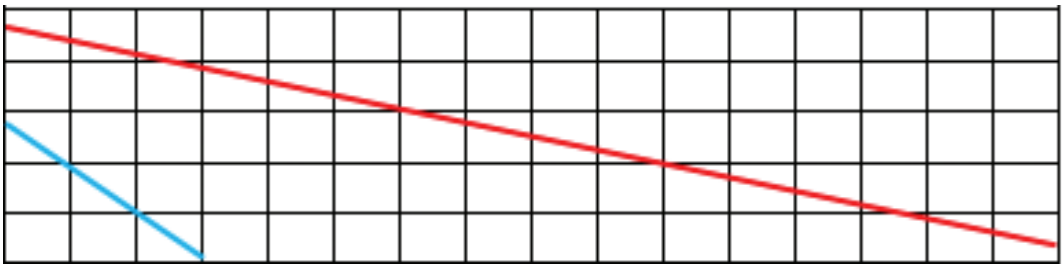
Error Messages

Problem	Possible Cause	Solutions
Main Line press error CODA cannot reach initial pressure.	• O-Cuff and/or VPR ports are open or not connected to the cuffs. • Cuff or cuff bladders are leaking.	• Ensure the cuffs are connected tightly to the CODA Monitor. • See "Diagnostic Procedures" to diagnose and determine the source of potential leak.
SBP & DBP unknown VPR curve fails Signature shape test. **SBP,DBP < 1sec** SP & DP separated by less than 1 second. **SBP,DBP > 1/2 cyc** SP & DP separated by more than half data collection time.	• Tail temperature is too low. • Animal is moving during measurement. • Cuff bladders are leaking. • Cuff size is too large or too small.	• Ensure animal's tail temperature measures between 32C and 35C. • Confirm that the cuffs are placed properly on the tail. • Ensure that the cuffs are not too loose or too tight on the tail. • See "Diagnostic Procedures" to diagnose and determine the source of potential leak.
Tail volume too low	• Tail temperature is too low. • Cuff size is too large or too small.	• Ensure animal's tail temperature measures between 32C and 35C. • Ensure that the cuffs are not too loose or too tight on the tail.

Sample Displays

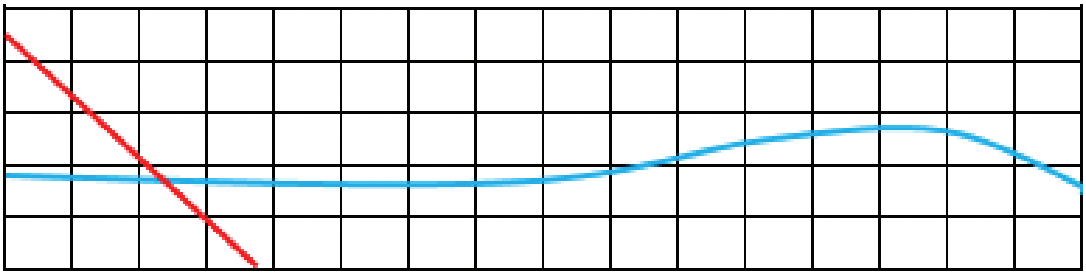


Correct BP Curve



VPR Cuff Leaks

Two sample displays showing leaking VPR cuffs. The top channel in each display shows a nearly horizontal blue line, indicating no leak in the VPR cuff. The bottom channel in each display shows a sharp drop at the beginning of the cycle, indicating a probable VPR cuff leak. Notice the red line for the O-cuff drops smoothly, indicating no leak in the O-cuff.



O-Cuff Leaks

Diagnostic Procedures

To access these diagnostic procedures, touch "CODA Tests".

Full Tests

Resulting Message	Meaning	Possible Action
Success	No leaks found.	No action required.
Fail	Air Leak.	Use O-Cuff and VPR Cuff tests to locate the cause of the leak. If you are unable to pinpoint and correct the problem, contact Kent Scientific.

O-Cuff Test

Resulting Message	Meaning	Possible Action
Success	No leaks found.	No action required.
Fail	Air Leak in O-cuff or bladder.	Replace the bladder within the cuff and test again. If you are unable to correct the problem, contact Kent Scientific.

VPR Test

Resulting Message	Meaning	Possible Action
Success	No leaks found.	No action required.
Fail	Air Leak in VPR cuff or bladder.	Replace the bladder within the cuff and test again. If you are unable to correct the problem, contact Kent Scientific.

CODA Cuff and Bladder Maintenance

Bladders in both the O-Cuffs and VPR cuffs require periodic replacement. Replacement bladders are included with your CODA Monitor.

Cuffs and bladder have a shelf life of approximately 1 year. Use only fresh Kent Scientific pre-measured cuff-bladder replacements. Other materials or replacement bladders could impact the accuracy of blood pressure readings.

1. Remove the external rubber washers (O-Rings) that secure the bladder at each end.
2. Slide the old bladder out through either end of the cuff and discard it.
3. Insert the new bladder into the cuff.
4. Fold the bladder over each end of the cuff.
5. Secure the bladder to the cuff by sliding the O-ring over the ends and toward the middle of the cuff. Be careful not to overstretch the bladder material.

Prolong the life of your cuffs and bladder by storing them in an air tight container when not in use.

Need more help? How-To and Educational Training Videos are available on our website at

https://www.kentscientific.com/video-library/

RightTemp Temperature Monitor and Homeothermic Warming

Set Up Hardware

1. Connect the warming pad to the "Pad Power" port on the front of the CODA Monitor.

2. Choose one of the two probes as the body temperature sensor.
   - For mice, select the smaller probe.
   - For rats, select the larger probe.

3. Connect the body temperature sensor to the "Animal Sensor" port.

4. Use the other probe as the pad sensor.

5. Connect the sensor to the "Pad Sensor" port.

We recommend that you secure the pad sensor to the warming pad using tape or something similar.

Configure Settings

RightTemp Sensor Calibration

1. Place both sensors in a beaker of water and measure the water temperature with an accurate digital thermometer.

2. Wait for the screen display for the sensors to stabilize.

3. Touch:
   1) "General setup".
   2) "RightTemp setup".
   3) "Calibrate temp".

4. Turn Dial B to enter the temperature as measured by the digital thermometer.

5. Press Dial B to save the calibration.

RightTemp Settings

1. Touch:
   1) "General setup".
   2) "RightTemp setup".
   3) "Control warming" to choose the type of warming:
      - "Off": temperature monitoring, no warming
      - "Unregulated": temperature monitoring, warming with no sensor control
      - "Pad temp regulated": temperature monitoring with Pad sensor control
      - "Body temp regulated": temperature monitoring with Animal sensor control

2. Set the target temperature, limit the maximum pad temperature, or set the power level depending on the type of warming you have selected. Appropriate buttons will appear on the screen to allow you to make settings.

Monitoring an Animal

Anesthetized Animals

1. Place the anesthetized animal on the warming pad.

2. Insert the animal sensor into the rectum of the animal. Secure the sensor if necessary.

Always secure the pad temperature sensor beneath the animal.

Conscious Animals

1. Place the animal holder directly on the warming pad.

2. Place both pad and body probes beneath the animal holder. Secure the sensors if necessary.

Be sure to set warming control to Pad Temperature regulation, as the rectal probe cannot be used in conscious animals.

RightTemp Troubleshooting

Problem	Possible Cause	Solutions
Pad is not heating.	Settings are incorrect.	• Ensure that all settings are properly enabled for warming and that target temperatures are selected.
	Connections are loose or incorrect.	• Ensure that the connection on the front of the CODA Monitor is tight.
Pad is overheating.	Settings are incorrect.	• Ensure that all settings are properly enabled for warming and that correct target temperatures are selected. • Enable a "Maximum Pad Temp" when type of warming is "Body temp regulated" to prevent overheating.
	Sensor placement is incorrect.	• Place pad sensors directly beneath the animal. • Confirm animal sensor is properly placed in rectum.
Sensors are reading incorrect temperatures.	Sensors require calibration.	• Recalibrate the temperature sensors.
	Sensor function has been reassigned.	• Recalibrate the temperature sensors. Do this any time you reassign sensor function.

RightTemp Pad and Sensor Maintenance

- Use the disposable warming pad covers to prevent soiling the warming pad.
- Wipe the warming pad clean with a damp cloth if needed. Never saturate the warming pad.
- Gently wipe the sensors clean between uses.

System Customization

Profiles

CODA Monitor can save your settings as one or more Profiles. Profiles contain all non-calibration-related settings, including display and functional settings.

To save your current settings as a new Profile:

1. Touch
   1) the upper half of the Run Screen for the Touch Screen Menu.
   2) "General setup".
   3) "Profiles", then "Profiles Menu".

2. Turn Dial B to select one of the available Profiles.

3. Press
   1) Dial B and follow on-screen directions to edit the name of that Profile.
   2) Dial B to save the Profile name.

4. Touch ">>", then press Dial B to save current settings to the highlighted Profile.

To load a previously saved Profile:

Touch
   1) the upper half of the Run Screen for the Touch Screen Menu .
   2) "General setup".
   3) "Profiles".
   4) "Load" for the Profile you would like to load.

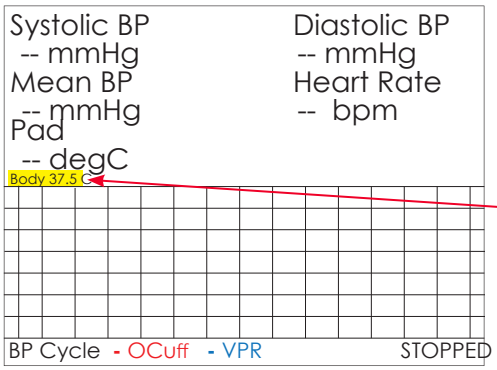
Custom Dial Functions

You can program the Dials to provide quick access to Parameter setting changes. This is convenient in cases where you must frequently change a particular Parameter setting in the middle of a procedure.

To assign a new dial function:

1. Touch:
   1) the upper half of the Run Screen for the Touch Screen Menu.
   2) "General setup".
   3) "Config".
   4) "Dial Menu".

2. Turn Dial B to assign a function.
   You can assign one function—changing a Parameter value—to each Dial.



Run Screen showing
Assigned Dial Function

Small text on the run screen displays the assigned Parameter name for each Dial, if set, and its current value.

To use a Dial command:

1. At the Run Screen, quickly turn the Dial assigned to the Parameter whose value you want to change. The CODA Monitor beeps and the associated text becomes blue.

2. Turn the Dial to increase or decrease the value for the assigned Parameter. After 3 seconds, the CODA Monitor beeps again and the command text returns to black.

As you turn a Dial, setting changes takes place immediately.

To restore defaults:

1. Touch:
   1) the upper half of the Run Screen for the Touch Screen Menu.
   2) "General setup".
   3) "Profiles".
   4) "Presets".

2. Turn Dial B to choose the settings you want to restore to their default values:
   - Operation values – all non-calibration, non-Profile and non-History-associated settings for all modules.
   - Saved Profiles – renames all Profiles "Default" and sets associated settings to defaults
   - History – erases history data.
   - Calibration – reset all calibration values.
   - Full Reset – return all settings to factory values.

Alarms

Alarms alert you to certain conditions that might require attention while the CODA Monitor is running.

There are three levels of alarms:

Level	Based On	Banner	Sound (If On)	Configurable
Warning	Parameters or other operating conditions	Yellow	Short, 1-beep pattern	Yes
Serious	Parameters or other operating conditions	Red	Longer 3-beep pattern	Yes except for system alarms

To configure a new Parameter alarm:

1. Touch:
   1) the upper half of the Run Screen for the Touch Screen Menu.
   2) "General setup".
   3) "Data Mgmt", then "Alarms".
   4) one of the four "Param" Buttons.

2. Using the Dials, make the alarm settings.

> **You can configure up to four Parameter Alarms. Other alarm options may be available depending on the combination of modules installed.**

To configure a fixed alarm:

1. Touch:
   1) the upper half of the Run Screen for the Touch Screen Menu.
   2) "General setup".
   3) "Data Mgmt", then "Alarms".
   4) "Fixed Alarms", then choose the alarm you want to configure.

2. Press Dial B and follow on-screen directions to change the alarm action and timing.

To clear a sounding alarm:

A triggered alarm produces a colored banner at the bottom of the screen describing the cause of the alarm. The banner color corresponds to the severity of the alarm.

To silence the alarm, touch:

1) the bottom half of the Run Screen.
2) "Stop Alarm".

Data Management

For PC Connections

Kent Scientific devices can collect and monitor data using a serial over-USB connection. The data can be uploaded to data acquisition and management programs that accept ASCII data, or Kent Scientific's CODA Software.

Kent Scientific devices are Windows® compatible only.

Driver Installation

The driver installs automatically the first time you connect your device to a PC via mini-USB cable. If the driver does not install automatically, you can install it manually from http://www.ftdichip.com/Drivers/VCP.htm.

COM Port Settings

Bits per second: 115200
Data Bits: 8
Parity: None
Stop bits: 1
Flow Control: DTR: green RTS: green

Upload to a PC

Normal Upload:

The Upload feature sends data at user-selectable time intervals to a PC through the USB port. CODA Monitor can upload data for up to 20 parameters simultaneously.

To upload data in real time to a PC:

1. Connect your Kent device to a PC.

Ensure drivers are installed, COM port settings have been adjusted, and the program you plan to use is running.

2. Touch:
    1) the upper half of the Run Screen for the Touch Screen Menu.
    2) "Upload Format" and set to Normal Upload. Then, touch "Back".
    3) "General setup".
    4) "Data Mgmt".
    5) "Upload".

3. Choose:
    1) the Parameters to be uploaded and the Timing interval for uploads.
    2) to add a Header, GroupID, and/or TimeStamp to records.

4. Touch "Enable" and choose either "Always enabled" or "Enabled while running".

The "Always enabled" setting sends data to a PC in ASCII format as long as the controller is on.

While Kent Scientific does not offer software programs specifically for ASCII upload, there are many programs commercially available.

History - Internal Storage

The History feature stores the most recent 1000 records from your runs. You can send this data to a PC through the USB port at a later time. CODA Monitor can store data for up to 10 Parameters simultaneously at user-selected time intervals. You can view the data on screen or export the data to a computer after your study is complete.

Data record 1001 will overwrite data record 0001, and so on.

To save data to History:

1. Touch:
    1) the upper half of the Run Screen for the Touch Screen Menu.
    2) "General setup".
    3) "Data Mgmt".
    4) "History".

2. Choose
    1) the Parameters to be saved and the Timing interval between saves.
    2) to add a Header, GroupID, and/or TimeStamp to records.

Changing these settings permanently deletes any previously saved data.

3. Touch "Enable" and choose "Enabled".

To view saved History:

1. Touch
   1) the upper half of the Run Screen for the Touch Screen Menu.
   2) "General setup".
   3) "Data Mgmt".
   4) "History".
   5) "View".

2. Press Dial B.

To export History to a PC:

1. Connect your Kent device to a PC.

Ensure drivers are installed, COM port settings have been adjusted, and the program you plan to use is running.

2. Touch:
   1) the upper half of the Run Screen for the Touch Screen Menu.
   2) "General setup".
   3) "Data Mgmt".
   4) "History".

3. Choose data to send. "Send new" exports only data collected since the last upload. "Send all" exports all data saved in History.

While Kent Scientific does not offer software programs specifically for ASCII upload, there are many programs commercially available.

Analog

The Analog Output feature sends an analog signal corresponding to a single Parameter to external equipment via a remote cable.

Please contact Kent Scientific for a remote cable if you would like to use this feature.

To configure Analog Output

1. Touch:
   1) the upper half of the Run Screen for the Touch Screen Menu.
   2) "General setup".
   3) "Data Mgmt".
   4) "Analog output".

2. Choose a Parameter to output.

3. Touch:
   1) "Back".
   2) "Config."

4. Touch "Set ranges" and choose a range for the Parameter.

> **The voltage output ranges from 0-4.095V, with 0V assigned to the low limit of the range, and 4.095V to the high limit.**

CODA PC Software

The optional CODA PC software allows you to set up, run, and monitor blood pressure from a desktop or laptop computer.

System Requirements

Operating Systems:	Windows® 7, 64 bit Windows® 8, 64 bit Windows®10 , 64 bit
Processor:	2.0 GHz or higher
RAM:	2 GB for 64 bit
USB Ports:	2
Driver:	CD ROM
Cards:	Video card, 1024x768 resolution
Internet Connection:	Yes

If you purchased your PC outside of the US, some of your Regional and Language settings will require adjustment:

1. **Open the Windows Control Panel and select Regional and Language Options.**
2. **At the Regional Options tab, select the language that most closely matches your location, and click Customize.**
3. **In both the Numbers and Currency tabs, set Decimal Symbol to be a point (.).**

Installing the CODA Software

1. Close all open applications on the PC.
2. Connect your Kent device to a PC.
3. Touch:
   a. the upper half of the Run Screen for the Touch Screen Menu.
   b. “Upload Format” and set it to CODA PC Program.
4. Insert the CODA software disk into the CD drive.
5. Navigate to the CD drive and run setup.exe
6. Follow the on-screen instructions to install the CODA software.

Using the CODA Software

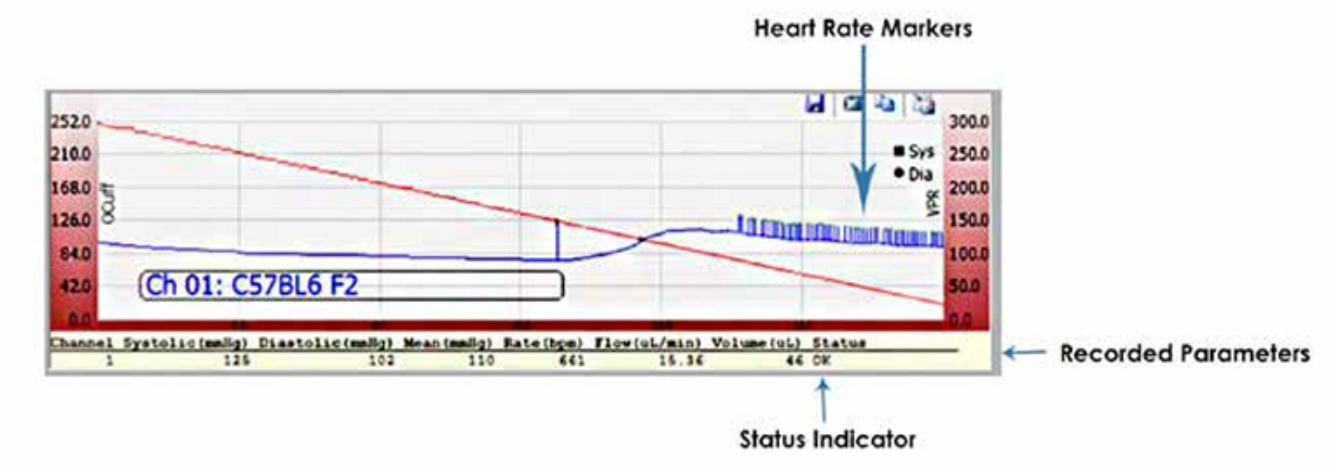
1. Open the CODA Software and select the CODA device.
   - When you open the CODA Software, the Device Manager appears. Click Use All Displayed Devices to proceed using the detected CODA.

2. Create or add to your list of Users, if necessary.
   - You must create a database of Users, Animals, and Animal Groups for your experiments. You will select items from these categories for each individual experiment you create. Create your database with the User and Animal Manager. You may enter the information for your upcoming Experiment only or the information that you plan to use for future experiments.

3. Create a new Experiment, and run a new Session of that experiment. Once you have created an experiment, you can return to it later to add additional sessions.
   - Before you can run an experiment, you must create it by giving it a name and assigning Users and Animals. Once you have created the experiment, you can return to it at any time for additional sessions.

You may create as many Experiments as you'd like and open Sessions for them whenever you need to. Only one Experiment at a time, however, may be running on a given Controller and in a given instance of the CODA software.

The CODA Software will automatically save and organize your data, as well as store graphs for later review.



General Information

Thank you for purchasing your CODA Monitor. We truly appreciate your business. We strongly advise that you read and study this Owner's Manual to appreciate the features, benefits, and capabilities of the CODA Monitor. Please visit our website for more information and helpful product videos.

Contact Information

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Connecticut 06790 E-mail:
sales@kentscientific.com

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Disclaimer

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This product is not designed, intended, or authorized for use in human applications.

Product Warranty

The CODA Monitor has a one (1) year warranty including all parts and labor charges. This warranty does not cover damage by any cause including, but not limited to, any malfunction, defect or failure caused by or resulting from unauthorized service or parts, improper maintenance, operation contrary to furnished instructions, shipping or transit accidents, modifications or repair by the user, harsh environments, misuse, neglect, abuse, accident, incorrect line voltage, fire, flood, other natural disasters, or normal wear and tear. Changes or modifications not approved by Kent Scientific Corporation could void the warranty. The foregoing is in lieu of all other expressed warranties. Kent Scientific Corporation does not assume or authorize any party to assume for it any other obligation or liability.

Satisfaction Guarantee

Should you experience difficulty with the CODA Monitor, our Technical Support Group will assist you in trouble-shooting and determining if the product needs to be returned to our facility. We will issue you a Return Manufacturer Authorization (RMA) number before the product is shipped back for repair. It is at the discretion of the manufacturer to replace or repair a defective part or product.

Please email support@kentscientific.com with any questions or to request a RMA number. Shipments without a RMA number will not be accepted. Please note that after our 30-day return policy period ends, we will be happy to assist you with your application, but cannot issue any credit or refund for a returned CODA Monitor.

Prior to shipment, please clean and decontaminate the product of any chemical, biological, or isotopic contamination.

Specifications

Controller

Voltage	12 V, 2.5A
Dimensions	29cm (11.41in) x 20cm (7.87in) x 7.6cm (2.97in)
Weight	1.7kg

Power Supply

Input	100 to 240 V, 50 to 60 Hz, 1.0 A
Output	12 V, 2.5 A

RightTemp Sensors

Resistance	2,252 Ohm
Operating temperature	-60°C to 150°C (-76°F to 302°F)
Sensor tip diameters	Mouse 0.077" and Rat 0.140"
Time constant in air	15.0sec
Dissipation constant	0.75 m/W (°C)

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