PhysioSuite®

Modular System

Fully integrated touch screen control and display

User's Guide

Kent Scientific
CORPORATION

PhysioSuite®

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Fully integrated touch screen control and display

User's Guide

Technical Help: 860-626-1172

TABLE OF CONTENTS

CapnoScan®

End-Tidal CO2 Monitor

RightTemp®

Temperature Monitor and Homeothermic Warming

Data Management

General Information

Introduction

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

System Components

Front Panel

Dial Controls

RightTemp Module
Pad Power
Animal Sensor
Pad Sensor

Expiratory Port (EXP)
Inspiratory Port (INSP)
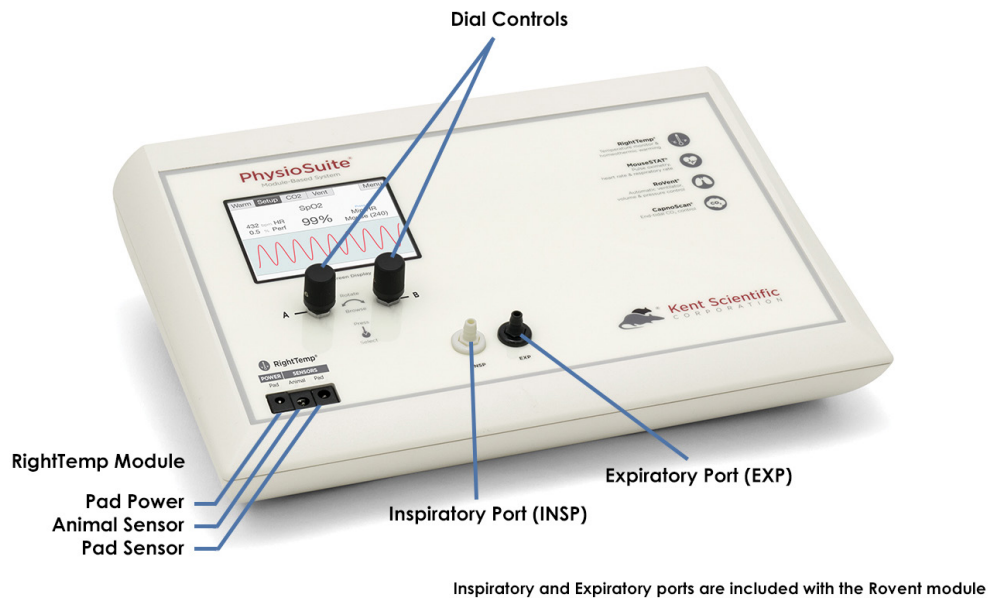
Inspiratory and Expiratory ports are included with the Rovent module

Note: If your PhysioSuite was purchased with RoVent, it will contain four airflow ports. If it was not purchased with RoVent, these ports will be absent from the controller.

Back Panel

Navigating PhysioSuite®

Module Screens

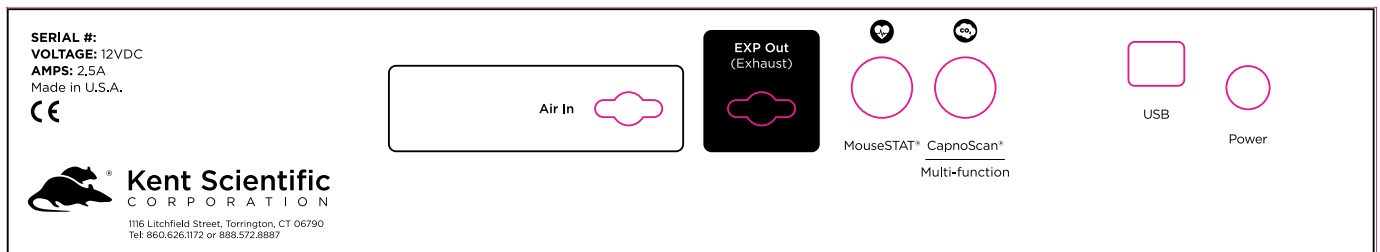The PhysioSuite Run screen has a designated screen for each installed module. Touch the tabs along the top of the screen to view the parameters and important settings for each module. Touch the tab again to open the module's extended Setup Menu.

Touch Screen

PhysioSuite Menu offers quick access to most features and settings. Touch the Menu button on the top right corner of the Run Screen.
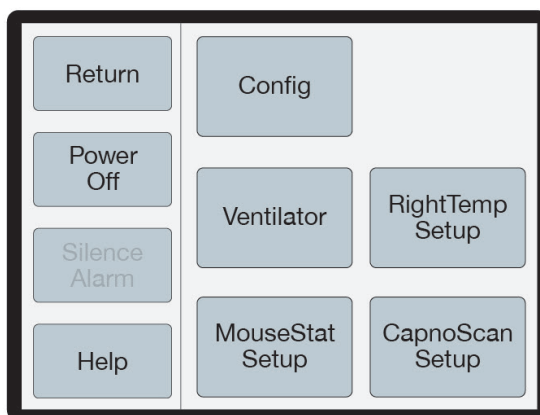
PhysioSuite Menu
(Available menu options may differ based on module configuration)

System Customization

Custom Run Screen

PhysioSuite allows you to configure your own Run Screen, allowing a combination of parameters from any installed modules to appear on a single screen.

> **When using a Custom Run Screen, all settings need to be entered from the Menu or configured with Dial A and B.**

To configure a Custom Run Screen:

1) From any Run Screen, touch Menu, then Config.

   i **Param Locations**
      Parameter locations allow you to decide where each parameter will be displayed on the screen. Turn Dial A to scroll through the list of available parameters, and turn Dial B to assign it to a location.

      Press Dial A when finished.

   ii **Charts**
       Charts allow you to customize the graph that is displayed on the lower portion of the Custom Run Screen. You can customize two independent charts. Choose Chart Type to assign the parameter to be graphed, and Period to assign a graph time point.

       Touch Back when finished.

   iii **Set Ranges**
        The Range setting allows you to customize the graph axis. The Ranges set here also apply to Analog Out. Turn Dial A to scroll through the list of available parameters, and then turn Dial B to adjust the range.

        Press Dial A when finished.

   iv **Dial Menu**
       The Dial Menu allows you to assign a dial command for your Custom Run Screen. Turn Dial A to choose a setting you want to control for Dial A. Touch >> to assign a setting to Dial B.

       Touch Back when finished.
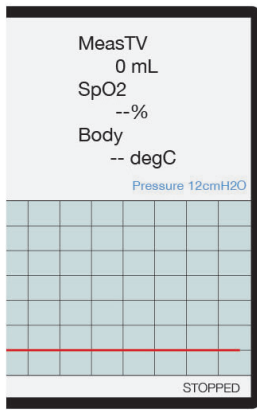
Dial Text

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

Run Screen with Dial Function Text

To use a dial command:

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

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

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

Alarms

The PhysioSuite Alarms alert you to certain conditions that might require attention.

There are two levels of alarms:

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

To configure a new Parameter alarm:

1) From any Run Screen, touch Menu then Config.

2) Touch Data Mgmt, then Alarms.

   i **Silence all Alarms**
   If you do not wish for the PhysioSuite to make an audible tone when an alarm is triggered, you can create silent alarms. Turn Dial B to choose "Silence all Alarms" or "Allow Sound".

   Touch Back when finished.

   ii **Parameter 1-4**
   Set a custom alarm based on any measured parameter. You may choose up to 4. Press Dial A when finished configuring the following settings:

   - Parameters: Choose a parameter to monitor by alarm.

   - Action: Choose how the alarm will alert you (message and/or sound)

   - Type: Choose status to trigger alarm

   - Value: Set the threshold value

   - Delay: Choose how long the value must meet the threshold before triggering the alarm

   - Clear: Choose how the alarm needs to be cleared

   iii **Fixed Alarms**
   The PhysioSuite includes a number of fixed alarms that alert you to scenarios that require attention. The number of Fixed Alarms are dependent on the number of modules installed. You may view and configure any of the Fixed Alarms by selecting it, then pressing A to enter the Alarm Menu.

To clear a sounding alarm:

A triggered alarm produces a colored banner at the bottom of the screen describing the cause of the alarm.

To silence the alarm:

1) Navigate to the corresponding Screen
2) Touch Setup, then Silence Alarm
   OR
1) Touch Menu from any Run Screen
2) Touch Silence Alarm

Set Up Hardware

If ventilating using ambient air (no vaporizer or compressed gas connection):

1. Remove the caps from rear ports and allow them to remain open to atmosphere.

2. Connect the Ventilator Tubing Adaptors to the ports, and attach the Intubation Tubing.

    The hub of a standard catheter endotracheal tube will slide over the end of the white fitting.

If ventilating using an anesthetic gas vaporizer or compressed gas source:

1. Connect the Bypass Assembly to the rear ports of the PhysioSuite.

    Note: The PhysioSuite RoVent is designed to operate with the ports at neutral pressure. The Bypass Assembly is required to neutralize any pressure buildup in the rear tubing. Backpressure can affect ventilator function.

2. Connect the anesthetic vaporizer or compressed gas source to the Inlet side of the Bypass, and a passive scavenging system (such as a charcoal canister) to the exhaust port.
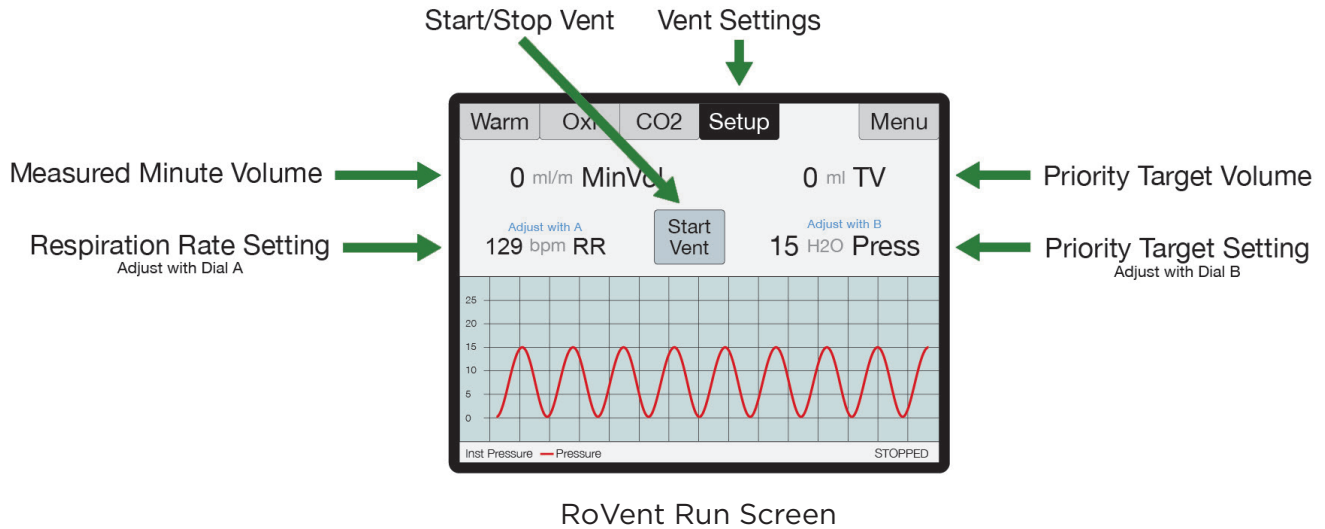
    Note: Kent Scientific does not recommend connecting active scavengers directly to the exhaust tubing.

3. Connect the Ventilator Tubing Adaptors to the ports, and attach the Intubation Tubing.

    The hub of a standard catheter endotracheal tube will slide over the end of the white fitting.

The RoVent Run Screen:

RoVent Run Screen

Initial Set-Up

Ventilator Calibrations:

The first time the RoVent is used, or any time the accessories have changed, be sure to perform a Deadspace Calibration and verify the ventilator settings.

Note: Never perform these functions when an animal is connected to the ventilator.

1. **Measure Deadspace**

   The Deadspace calibration will measure the volume of tubing between the PhysioSuite RoVent module and the animal.   It is important that the Deadspace is recalibrated every time the tubing configuration is changed to maintain accurate tidal volume delivery.

   1) Set up tubing.

   2) From the Vent Run Screen, touch Setup then More Ventilator.

   3) Touch Calib & Tests, then Measure Deadspace.

   4) Firmly seal the end of the endotracheal tube connector with your finger or a cap, ensuring that there is no air leakage.

   5) Press Dial B. When asked to confirm measurement, press Dial B again.

The first time the RoVent is used, or any time the accessories have changed, be sure to perform a Deadspace Calibration and verify the ventilator settings.

Note: Never perform these functions when an animal is connected to the ventilator.

2. Zero Sensors

Zeroing the sensors ensures that the internal pressure and flow sensors are working properly, and calibrates them prior to the ventilation. It is important that the sensors are zeroed to ensure accurate inspiratory pressure delivery.

1) Set up tubing.

2) From the Vent Run Screen, touch Setup then More Ventilator.

3) Touch Calib & Tests, then Zero Sensors.

4) Press Dial B. When asked to confirm measurement, press Dial B again.

Configure Settings

Configure all ventilator settings from the Vent Run Screen.

Pressure Priority: RoVent ventilates to a specified inspiratory pressure. The default target pressure is 15cmH2O independent of body weight setting. To change the target pressure, touch **Set Target Pressure**.

Volume Priority: RoVent delivers an initial target pressure for the first breath, then delivers a target tidal volume. The default target tidal volume is calculated based on body weight. To change the target tidal volume, touch **Set Target Volume.**

> **Note: You can change the initial target pressure for the first breath, as well as the minimum and maximum allowed pressures to customize the ventilator's operating range as the ventilator delivers the set tidal volume.**

The Vent Setup also allows you to make advanced ventilation settings:

- **PEEP:** Automatically add a positive end-expiratory pressure.
    - o Choose between 0cmH2O and 9cmH2O.
    - o Used to prevent alveolar collapse during open-chest procedures.

- **Sigh Breath:** Automatically add an intermittent breath with a larger tidal volume.
    - o Choose frequency and tidal volume of sigh breaths.
    - o Evenly distributes inspiratory pressure to prevent partial alveolar collapse.

- **I/E Ratio:** Change the breath mechanics.
    - o Choose the ratio of inspiratory to expiratory portions of a breath cycle.
    - o Useful to increase oxygenation in certain respiratory models.

- **Inspiratory Pause:** Change the breath mechanics.
    - o Choose the time between the end of active inspiration and the start of expiration.
    - o Useful to increase oxygenation in certain respiratory models.

- **Assist Mode:** Change the breath pattern.
    - o Choose how an animal is allowed to breathe at a spontaneous respiration rate, while the ventilator retains control of target inspiratory pressure or target tidal volume.
    - o Useful during recovery from long procedures, or in certain respiratory models.

> **Assist Mode settings override Respiration Rate settings as long as Assist Mode is enabled.**

- **Pulse Mode:** Change the breath pattern.
    - o Choose how the ventilator structures the breath cycle.
    - o Useful to apply rapid high pressure to animal's airways to evenly distribute inspiratory pressure and prevent partial alveolar collapse.

> **Pulse Mode Menu settings override target pressure and target volume settings as long as Pulse Mode is enabled.**

Procedure For Use

> **Caution:** If you choose to alter the tubing length, be sure to recalibrate the deadspace. See page 7.

1. Touch Vent to open the RoVent Run Screen.

2. Touch Start Vent to begin ventilation.

> **Caution:** Do not start the ventilator before the animal is intubated and connected to the ventilator tubing.

3. Enter the animal weight.

> The RoVent calculates the respiration rate and tidal volume using the animal's body weight.
>
> To change these settings, turn Dial A or Dial B. Touch Setup from the Vent Run Screen to make other changes to Respiratory Rate, Target Pressure, Tidal Volume, or other advanced settings.

4. From the Vent Run Screen, touch Stop Vent to stop air flow.

Trigger Command Settings

You can assign RoVent-specific functions to either a Dial press or an external signal via remote cable.

To set a new Trigger Command:

1. From the Vent Run Screen, touch Setup, then More Ventilator.
2. Touch Triggers Menu.
3. Turn Dial B to choose an action.

Some actions will require additional settings. Please contact Kent Scientific if you need assistance in enabling a trigger function.

Constant Flow Mode

For setups where a constant flow or gas passthrough is required, the RoVent can be set to Air Mode. To access Air Mode, touch the Air menu.

Air Mode contains three different flow options:

1. Body Weight Flow: Preset based on the Body Weight setting
2. Low Flow: User settable
3. High Flow: User settable

The flow can be adjusted and controlled as needed.

Note: Air Mode is not a mechanical ventilation feature and will not control the animal's respiration.

Raw Override Mode

For setups where the RoVent's safety parameters are not desired, the RoVent can be set to Raw Override Mode. Raw Mode will ignore the RoVent's 30cmH2O Inspiratory Pressure limit, allowing the user to customize the breath shape. To access Raw Mode, touch Setup from the Vent Run Screen.

Note: Raw Mode is a full ventilator override, and injury to the animal may occur.

RoVent Troubleshooting

Alarm Messages

Message	Definition	Solution
Tube open to atmosphere	The highest measured pressure in a breath cycle is under 25% of the target and the tidal volume is over target.	• Check the tubing between the INS and EXP ports for leaks or loose connections. • The ventilator circuit is open. Do not run the ventilator prior to connecting the animal. • Verify that the Body Weight or Target tidal volume setting is correct and that the delivered tidal volume is an appro priate value for the animal's size. • If the error persists, perform a Leak Test in the Calib & Tests section.
Tube blocked	The highest measured pressure in a breath cycle is under 25% of the target and tidal volume is under target.	• The endotracheal tube is not seated correctly. • There is a kink, blockage or foreign matter in the inspiratory or expiratory lines.
Exhaust blocked	The breath pressure fails to drop during the expiratory phase of a breath.	• The cap is on the EXP port. • The expiratory valve has failed.
Out of regulation	Over five consecutive breaths, peak pressure was more than 25% or less than 75% of your target.	• Requested Tidal Volume is too high for Pressure and RR .
Large rise in TV	Over the last four breaths, there was an increase of more than 25% in average tidal volume compared to that of the previous 16 breaths.	• Part of the tubing between the INS and EXP ports is open, disconnected or leaking.
Large drop in TV	Over the last four breaths, there was a decrease of more than 25% in average tidal volume compared to that of the previous 16 breaths.	• There is a kink in the tubing. • There is foreign matter in the tubing or in the exhaust valve. • The exhaust outlet is blocked. • The endotracheal tube is not seated correctly.
Deadspace calib	Dead space calibration produced a negative tidal volume.	• Deadspace calibration is incorrect for current tubing setup.

Diagnostic Procedures

To access these diagnostic procedures, open the Vent Run Screen, touch Setup, then More Ventilator, and Calib&Tests.

Purge

Clears any accumulations from the valves using high pressure air flow.

Resulting Message	Meaning	Possible Action
Success	No leaks found.	None is needed.
Low baffle pressure	There is an internal RoVent problem.	Contact Kent Scientific.

Leak Test

Checks for internal leaks as well as leaks in tubing circuits.

Resulting Message	Meaning	Possible Action
Test OK	No leaks found.	None is needed.
Tubing leaks	The tubing is open to the atmosphere through a loose connection or a crack or hole in the tubing.	Tighten all connections and ensure that the circuit is air tight. Run Leak test again. If the error recurs, contact Kent Scientific.
Low baffle pressure or **Baffle leaks**	There is an internal RoVent problem.	Retest making sure that the tubing is not flexed or moved. If the error recurs, contact Kent Scientific.

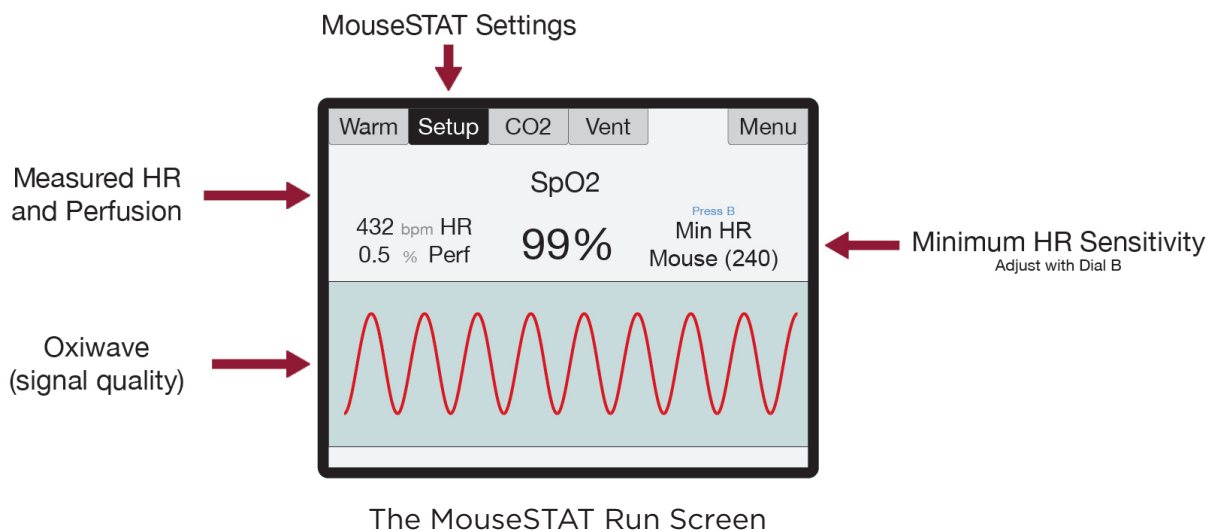# MouseSTAT Pulse Oximeter and Heart Rate Monitor

Set Up Hardware

Sensor:

1. Connect the interface cable to the MouseSTAT port on the back of the PhysioSuite.

2. Connect the sensor to the interface cable and ensure that the connection is secure.

The MouseSTAT Run Screen:

MouseSTAT Settings

Measured HR and Perfusion

| Warm | Setup | CO2 | Vent | | Menu |

SpO2

432 bpm HR
0.5 % Perf

99%

Press B
Min HR
Mouse (240)

Minimum HR Sensitivity
Adjust with Dial B

Oxiwave
(signal quality)

The MouseSTAT Run Screen

Initial Set Up

1) From the Oxi Run Screen, press then Turn Dial B to set the Minimum Heart Rate for your animal.

Procedure for Use

1) Anesthetize the animal and place on the RightTemp warming pad.

> **Tip: Kent Scientific recommends the use of inhalant anesthetics. Injectable anesthetic agents have a greater effect on circulation, making pulse oximetry challenging. Always warm the animal to support circulation in the animal's extremities.**

2) Align the sensor over the hind paw of the animal, centering the red light over the paw pad.

MouseSTAT sensor on animal

> **The sensor automatically begins readings. To monitor signal quality, view the Oxiwave graph on the Oxi Run Screen.**

> **MouseSTAT with Optional Respiratory Rate Parameter allows you to monitor RR. To obtain RR, a strong pulse oximetry signal is required.**

MouseSTAT Troubleshooting

Problem	Possible Cause	Solutions
There is no red light or blinking light in the sensor.	Sensor not fully connected	• Ensure that all connections are tight, especially at the back of the controller.
	Damaged wire in sensor or interface cable	• Replace the damaged cable.
Readings are inconsistent. or There are no readings.	Incorrect sensor placement	• Reposition sensor on the animal's paw.
	Poor animal circulation	• Investigate types and dosages of anesthetic and other drugs in use; reduce where possible. • Increase animal body temperature to encourage circulation.

MouseSTAT Sensor Maintenance

- Avoid any practice that creates tension or strain on the sensor cable or connections. MouseSTAT sensors are designed to be gentle on small paws.

- When the MouseSTAT sensor is not in use, gently coil it and store it in its package to prevent tangles or bends in the sensor wire.

- Gently wipe the sensor clean between uses.

The CapnoScan Run Screen:

CapnoScan Settings

Measured Peak and Min CO2

Peak CO2 %

Min CO2 0%

3.1%

Press B

RR Range 40-200

RR Range Sensitivity
Adjust with Dial B

Warm   Oxi   Setup   Vent   Menu

CO2 Waveform (signal quality)
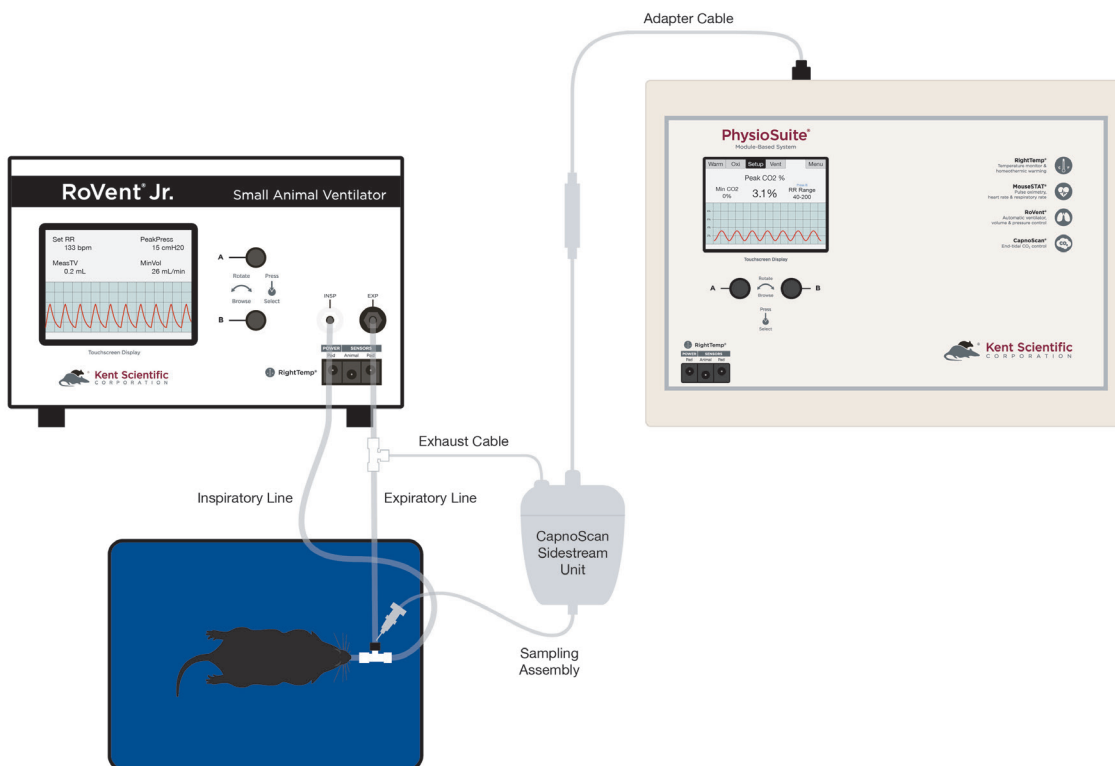
The CO2 Run Screen
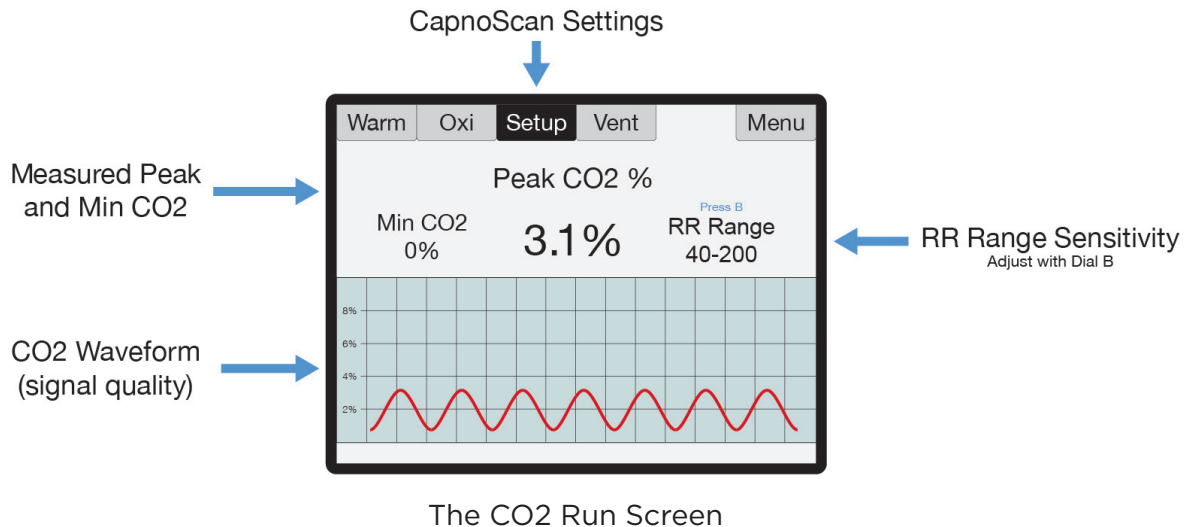
Set Up Hardware

Sensor:

1. Connect:

    1) the interface cable to the CapnoScan port on the back of the PhysioSuite

    2) the side-stream sensor to the interface cable, ensuring that the connection is secure.

2. Insert:

    1) the sampling assembly into the back slot of the side stream unit.

    2) the sampling needle into the expiratory line of the ventilator as close to the animal as possible.

3. Attach the return line to the expiratory line, close to the ventilator.

> **For CapnoScan to accurately measure end-tidal CO2, the animal must be connected to a ventilator.**

PhysioSuite Ventilator and CapnoScan Setup
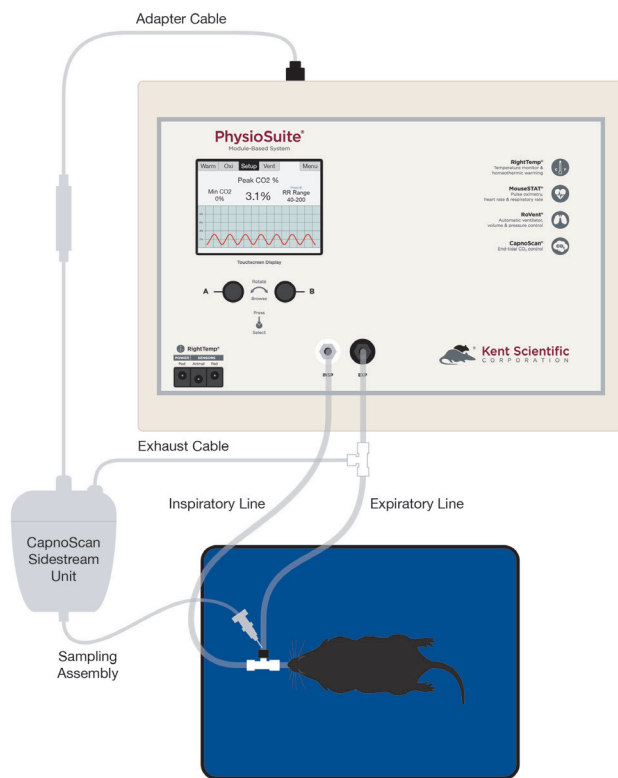
PhysioSuite CapnoScan with External Ventilator Setup

Initial Set-Up

CapnoScan Calibration:

1. From the Co2 Run Screen, touch Setup.

2. Touch More CO2, then Calib CO2 Sensor. Press Dial B to zero the sensor.

Procedure for Use:

1) From the CO2 Run Screen, touch Setup.

2) Enter the gas parameters.

   - CO2 units: Choose mmHg or %.

   - Measure RR: Use CapnoScan to measure the animal's respiration rate. Choosing "Yes With Priority" will allow the CapnoScan's MeasRR readings to override MouseSTAT's MeasRR readings.

   - RR range: Choose the expected respiration rate range for your animal. (This can be adjusted from the CO2 Run Screen by pressing and turning Dial B).

   - Gas temp: Choose the temperature of the expiratory gas.
     When measuring an animal's ETCO2, use the default value of 35°C.

   - Pressure: Set the current barometric pressure for the day.

   - Percent O2: Estimate the concentration of O2 in expired gas.

   - Gas type: Indicate the type of balance gas in use.

   - Percent NO2: Set the concentration of NO2 in the balance gas.

> **Note: Whenever these settings are changed, disconnect the CapnoScan from the PhysioSuite, then reconnect it. This will reinitialize the sensor so that the new settings take effect.**

3) Connect the animal to the ventilator.
   The sensor automatically begins readings.

> **To monitor the CO2 waveform, set the type for one of the charts to "InstCO2". (See page 3).**

CapnoScan TroubleShooting

Problem	Possible Cause	Solutions
CO2 readings are low or incorrect.	Poor sampling needle placement	• Place the sampling needle into the expiratory tubing as close to the animal as possible.
	Incorrect compensation settings	• Enter all gas compensations as accurately as possible. • Zero the CapnoScan relative to the airway adapter.
There are no readings.	CapnoScan not running or not connected	• Ensure that all connections are tight, especially at the back of the PhysioSuite. • Ensure that the CapnoScan is running.
	Sampling tube dirty or damaged	• Ensure that the sampling tube is not wet, soiled or damaged. • Remove the sampling assembly from the CapnoScan sensor and clean the window gently.

CapnoScan Sensor Maintenance

- Replace the sampling assembly if wet or soiled. CapnoScan sampling assemblies are designed to be disposable.

- When the CapnoScan sensor is not in use, gently coil the cables and store them in their package to prevent any dust or debris from entering the sampling assembly port.

- Gently wipe the sensor clean between uses.

Set Up Hardware

1. Connect the warming pad to the Pad Power port on the front of the PhysioSuite.

2. Choose one probe as the body temperature sensor, and the other as the pad temperature sensor.

   • The probes are fully interchangeable.

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

4. Connect the pad sensor to the Pad Sensor port.

Pad and Body Temperature Sensors Connected to PhysioSuite®
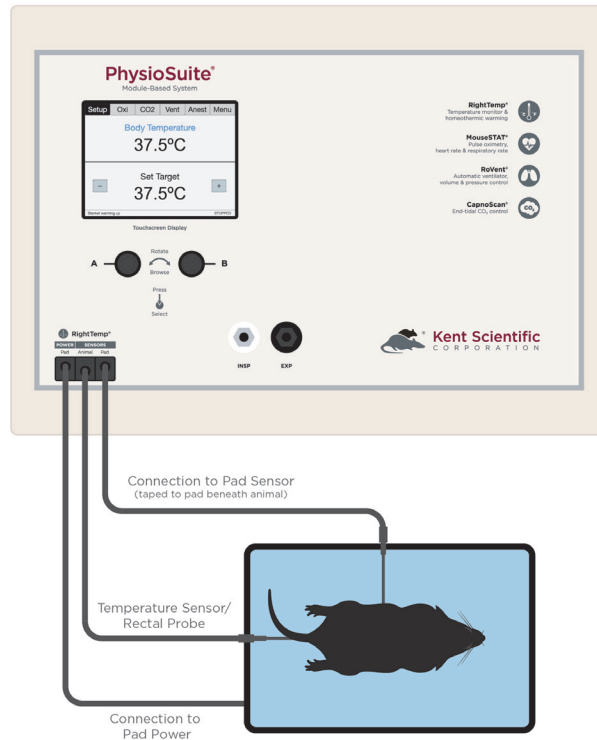
Setup Diagram

5. Secure the pad temperature sensor in the center of the warming pad using tape, etc. If using the included disposable pad covers, make sure the sensor is positioned prior to covering the pad.

6. We recommend that you secure the Pad Temperature Sensor to the warming pad directly beneath the animal. If surgical drapes or other barriers are used, place the sensor on the top layer closest to the animal.

7. Apply tape or other adhesives on the black portion of the cable. Taping over the white portion of the sensor may result in damage to the sensor.

Initial Set-Up

1) From the Warm Run Screen, touch Setup.

2) Touch Control Warming, and choose the warming method.

- Off: temperature monitoring, no warming

- Warming Pad: temperature monitoring with power adjustment

- Homeothermic: temperature monitoring and control using animal sensor control

Pad Temperature Regulation:

Pad temperature regulation allows you to set and monitor the temperature of the warming pad. This mode requires the use of the pad temperature sensor.

To use Pad Temperature Regulation, connect the pad temperature sensor.

1. Use the – and + icons to set a warming level.

2. The pad will automatically begin to warm.
   a. The Pad Temperature is displayed in the top half of the screen.

Note: If the sensor should fail during use, the RightTemp will alert you with a beep. The screen will display "No Sensor", and warming will be reduced to 50% power.

To resolve, reconnect the sensor or touch Setup and then Silence Alarm.

Homeothermic Regulation:

Homeothermic regulation allows you to set and control the body temperature of the animal. The mode requires the use of the body and pad temperature sensors.

To use Unregulated Warming, connect both pad and body sensors.

1. Use the – and + icons to set the target body temperature of the animal.

2. The pad will automatically begin to warm.

Procedure for Use

1. Place the anesthetized animal on the warming pad directly on top of the Pad Sensor.

2. If using Homeothermic regulation, insert the animal temperature probe into the rectum of the animal. Secure the probe if necessary.

> **Always secure the pad temperature probe beneath the animal.**

RightTemp Troubleshooting

Problem	Possible Cause	Solutions
Pad is not heating.	Incorrect settings	• Ensure that all settings are properly enabled for warming and target temperatures are selected.
	Incorrect or loose connections	• Ensure that the connection at the back of the PhysioSuite is tight.
Pad is overheating.	Incorrect settings	• Ensure that all settings are properly enabled for warming and target temperatures are correctly selected. • Enable a "Maximum Pad Temp" when type of warming is "Body temp regulated" to prevent overheating.
	Incorrect sensor placement	• Place pad sensors directly beneath the animal. • Place animal sensor rectally only.
"Lost Sensor" alarm	The sensor has been disconnected.	• Reconnect the temperature sensors.
	Sensor failure	• Contact Kent Scientific for assistance.

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.

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 a variety of programs, including ADI's data acquisition software, LabChart®.

If you do not have LabChart, please contact Kent Scientific for recommended alternatives.

> **Kent Scientific devices are Windows® compatible only.**

Driver Installation

The driver installs automatically the first time you connect your device to a PC via miniUSB 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

The Upload feature sends data at user-selectable time intervals to a PC through the USB port. The PhysioSuite 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. From any Run Screen, Touch:

   1) Menu, then Data Management, then Upload

3. Choose:

   1) The Parameters to upload

   2) The timing

   3.) Then touch Enable.

> **The "Always enabled" setting saves data as long as the controller is on. The "Enabled while running" setting is available only if your system contains a RoVent ventilator, and saves data only when the ventilator is running.**

History - Internal Storage

The History feature stores parameters records in ASCII format, up to 1000 rows. You can send this data to a PC through the USB port at a later time. Each row can include 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. From any Run Screen, Touch:

   1) Menu, then Data Management, then History

2. Choose:

   1) The Parameters to save

   2) The timing

> **Tip: Changing these settings permanently deletes any data currently saved on the system. Be sure to Export any saved data to a PC prior to making changes.**

   3) Then touch Enable.

To view saved History:

1. Touch Menu, Config, Data Management, then History. Touch View.

    Or

2. From the Menu, touch Return. The PhysioSuite will give you options for your return screen. Select Hist to view history recordings.

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. Refer to the Data Management Guide for more information.

2. From any Run Screen, Touch:

    1) Menu, then Data Management, then History

3. Choose:

    1) Send New: export only new data since the last export

    2) Send All: export all History saved to the device.

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. From any Run Screen, Touch:

2. Menu, then Data Management, then Analog Output.

3. Choose a Parameter to output.

> **The voltage output ranges from 0-3V, with 0V assigned to the low limit of the range, and 3V to the high limit.**
>
> **See Custom Run Screen on page 3 to set a Range corresponding to the 0-3V output.**

General Information

Thank you for purchasing a PhysioSuite. We truly appreciate your business. We strongly advise that you read and study this User's Guide to fully appreciate all the features, benefits, and capabilities of the PhysioSuite.

Contact Information

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Internet: www.kentscientific.com

Disclaimer

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

Product Warranty

The PhysioSuite 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 PhysioSuite, 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 call Customer Service at 888-572-8887 to obtain a Return Manufacturer Authorization 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 PhysioSuite.

Prior to shipment, please clean and decontaminate the product of any chemical, biological, or isotopic contamination. Please include a completed Product Return Form with the shipment. This form can be obtained by contacting Kent Scientific Customer Service at 888-572-8887 or 860-626-1172.

Specifications

Controller

Voltage	12V, 2.5A
Dimensions	29cm (11.41in) x 20cm (7.87in) x 7.6cm (2.97in)
Weight	Without ventilator module: 1.7kg; With ventilator module: 1.9kg

Power Supply

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

RoVent

Control Modes	Volume controlled, pressure controlled
I:E Ratio	1:1 to 1:5
PEEP	Built-in
Respiratory Assist	Automatic or Manual
Sigh Pressure	2cmH2O to 30cmH2O
Sigh Breath	Automatic or Manual
Respiratory Rate Range	20bpm to 400bpm
Tidal Volume Range	0.01 to 12.0mL
Weight Range	3g to 1,250g

MouseSTAT

Heart Rate	Up to 900bpm
Resolution	1%
SpO2 Range	70% to 100%
Alarms	5, programmable
Data Export	Yes
SpO2 Sensors	Mouse: Soft Touch paw sensor Rat: Soft Touch paw sensor, or large animal sensor Pup: Annular paw or body sensor MRI compatible sensors available

RightTemp Sensors

Resistance	2,252 ohms
Tolerance	+/- 0.2°C
Accuracy	25°C to 45°C
Operating Temperature	-40°C to 80°C
Sensor Diameters	Ball Tip Diameter: 1.65mm max Shaft: 1.5mm
Time Constant	10.0 seconds
Dissipation Constant	0.75m/W (°C)

CapnoScan Sensor

Transducer type	Sidestream CO2 Sensor
Principle of operation	Non-dispersive infrared (NDIR) single beam optics, dual wavelength, no moving parts
Initialization time	Capnogram displayed in less than 15 seconds at an ambient temperature of 25°C, full specifications within 2 minutes
CO2 measurement range	0mmHg to 120mmHg, 0% to 16%, 0kPa to 20kPa (at 760mmHg); Barometric Pressure supplied by host
Rise time	Less than 60ms
CO2 resolution	0.1mmHg at 0mmHg to 69mmHg 0.25mmHg at 70mmHg to 150mmHg
CO2 accuracy	±2mmHg at 0 to 150mmHg
CO2 stability	Short term drift: Drift over four hours shall not exceed 0.8mmHg max Long term drift: Accuracy specification will be maintained over a 120-hour period
Calibration	No routine user calibration required; an airway adapter zero is required when changing to a different style adapter
Airway adapter	< 1cc dead space adapter
Conditions	Operating: 0°C to 45°C, 10% to 90% RH, non-condensing Storage: -40°C to 70°C, <90% RH, non-condensing

Index