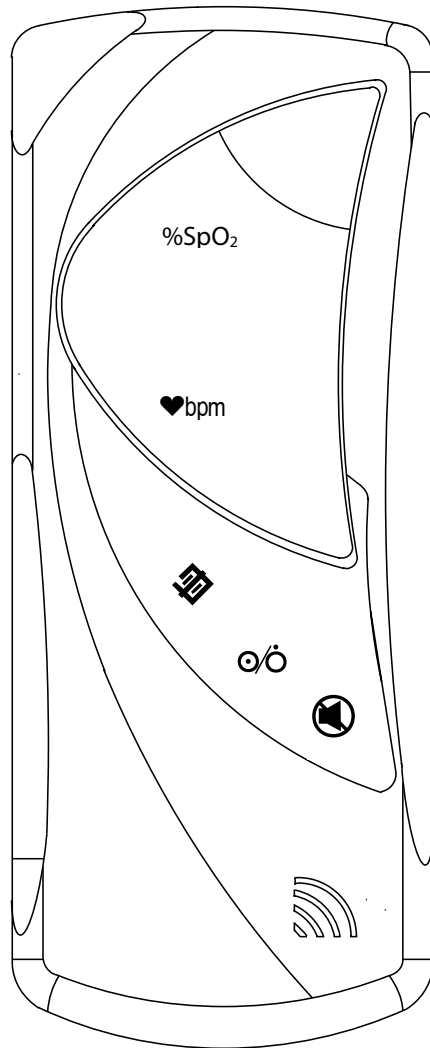


# Operating Instructions



## **Burdick<sup>®</sup> OXY 100 Pulse Oximeter**

Operating Instructions Part No. 010-1359-00  
Version 5, January 2006

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## Warranty & Service Information

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### Proprietary Notice

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Information contained in this document is copyrighted by Cardiac Science Corporation and may not be duplicated in full or part by any person without prior written approval of Cardiac Science Corporation. Its purpose is to provide the user with adequately detailed documentation to efficiently install, operate, maintain and order spare parts for the device supplied.

Every effort has been made to keep the information contained in this document current and accurate as of the date of publication or revision. However, no guarantee is given or implied that the document is error free or that it is accurate regarding any specification.

### WARRANTY

---

#### Limited Warranty

Seller warrants to the original purchaser that the Product, not including accessories, shall be free from defects in materials and workmanship under normal use, if used in accordance with its labeling for two years from the date of shipment to the original purchaser.

Seller warrants to the original purchaser that the reusable oximeter sensors supplied as accessories, shall be free from defects in materials and workmanship under normal use, if used in accordance with its labeling for one year from the date of shipment to the original purchaser (USA).

#### Disclaimer of Warranties

**THE FOREGOING EXPRESS WARRANTY, AS CONDITIONED AND LIMITED, IS IN LIEU OF AND EXCLUDES ALL OTHER WARRANTIES WHETHER EXPRESS OR IMPLIED, BY OPERATION OF LAW OR OTHERWISE, INCLUDING BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.**

Seller disclaims responsibility for the suitability of the Product for any particular medical treatment or for any medical complications resulting from the use of the Product. This disclaimer is dictated by the many elements which are beyond Seller's control, such as diagnosis of patient, conditions under which the Product may be used, handling of the Product after it leaves Seller's possession, execution of recommended instructions for use and others.

#### Conditions of Warranty

This warranty is void if the Product has been altered, misused, damaged by neglect or accident, not properly maintained or recharged, or repaired by persons not authorized by Seller. Misuse includes, but is not limited to, use not in compliance with the labeling or use with accessories not manufactured by Seller. This warranty does not cover normal wear and tear and maintenance items.

#### Limitation of Remedies

The original purchaser's exclusive remedy shall be, at Seller's sole option, the repair or replacement of the Product. **THIS IS THE EXCLUSIVE REMEDY. In no event will Seller's liability arising out of any cause whatsoever (whether such cause is based in contract, negligence, strict liability, tort or otherwise) exceed the price of the Product and in no event shall Seller be responsible for consequential, incidental or special damages of any kind or nature whatsoever, including but not limited to, lost business, revenues and profits.**

### Warranty Procedure

To obtain warranty service in the USA, you must request a Return Material Authorization (RMA) number from Technical Support. Reference the RMA number when returning your Product, freight and insurance prepaid, to:

Cardiac Science Corporation	Phone: (608) 764-1919
500 Burdick Parkway	Toll-Free: (800) 333-7770
Deerfield, Wisconsin 53531	Fax: (608) 764-7193
U.S.A.	


Website: [www.cardiacscience.com/burdick](http://www.cardiacscience.com/burdick)

Email: [info@cardiacscience.com](mailto:info@cardiacscience.com)

Seller will not be responsible for unauthorized returns or for loss or damage to the Product during the return shipment. The repaired or replaced Product will be shipped, freight prepaid, to Purchaser.

### CE Notice

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Marking by the symbol  indicates compliance of this device to the Medical Device Directive 93/42/EEC.













Authorized Representative (as defined by the Medical Device Directive):

Smiths Medical International Ltd.	Phone: (44) 1923 246434
Colonial Way, Watford, Herts,	Fax: (44) 1923 240273
UK WD24 4LG	

## Warnings, Cautions, & Notes

KEYWORD	DEFINITION
WARNING	Tells you about something that could hurt the patient or hurt the operator
CAUTION	Tells you something that could damage the monitor
NOTE	Tells you other important information

## Symbol Definitions

SYMBOL	DEFINITION
	Type BF equipment
	Attention, consult accompanying documents
	Refer servicing to qualified service personnel
	Output voltage
	Input voltage
	Clear ID
	Direct current
	Alarm Silence
	On/Off
	Non AP device
	Speaker On/Off
	Use By

## Warnings

**WARNING!** Federal law (USA) restricts the use or sale of this device by, or on the order of, a physician.

**WARNING!** Do not use this device in the presence of flammable anesthetics.

**WARNING!** Do not use this device in the presence of magnetic resonance imaging (MR or MRI) equipment.

**WARNING!** This device must be used in conjunction with clinical signs and symptoms. This device is only intended to be an adjunct in patient assessment.

**WARNING!** Prolonged use or the patient's condition may require changing the sensor site periodically. Change sensor site and check skin integrity, circulatory status, and correct alignment at least every 4 hours.

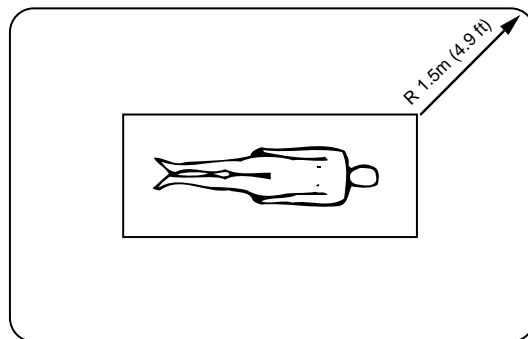
**WARNING!** When attaching sensors with Microfoam<sup>®1</sup> tape, do not stretch the tape or attach the tape too tightly. Tape applied too tightly may cause inaccurate readings and blisters on the patient's skin (lack of skin respiration, not heat, causes the blisters).

**WARNING!** When connecting this monitor to any instrument, verify proper operation before clinical use. Refer to the instrument's user manual for full instructions. Accessory equipment connected to the monitor's data interface must be certified according to the respective IEC standards, i.e., IEC 950 for data processing equipment or IEC 601-1 for electromedical equipment. All combinations of equipment must be in compliance with IEC 601-1-1 systems requirements. Anyone connecting additional equipment to the signal input port or the signal output port configures a medical system, and, therefore, is responsible that the system complies with the requirements of the system standard IEC 601-1-1.

**WARNING!** Patient safety can be compromised by the use of a power supply not supplied by Cardiac Science Corporation. Use only the power supply included with your monitor, or approved by Cardiac Science Corporation

**WARNING!** IEC 950 approved equipment must be placed outside the "patient environment." The patient environment is defined as an area 1.5 m (4.92 feet) from the patient.

PATIENT ENVIRONMENT



## Cautions

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**CAUTION!** Do not autoclave, ethylene oxide sterilize, or immerse the sensors or monitor in liquid. Evidence that liquid has been allowed to enter the monitor voids the warranty.

**CAUTION!** This device is intended for use by persons trained in professional health care. The operator must be thoroughly familiar with the information in this manual before using the device.

**CAUTION!** Connect only the printer cable specifically intended for use with this device (see *Optional Supplies and Accessories*).

---

<sup>1</sup> Microfoam<sup>®</sup> is a registered trademark of the 3M Company

## Notes

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- NOTE!** Operation of this device may be adversely affected in the presence of strong electromagnetic sources, such as electrosurgery equipment.
- NOTE!** Operation of this device may be adversely affected in the presence of computed tomograph (CT) equipment.
- NOTE!** Use only SpO<sub>2</sub> sensors supplied with, or specifically intended for use with, this device.
- NOTE!** SpO<sub>2</sub> measurements may be adversely affected in the presence of high ambient light. Shield the sensor area (with a surgical towel, for example) if necessary.
- NOTE!** Dyes introduced into the bloodstream, such as methylene blue, indocyanine green, indigo carmine, patent blue V (PBV), and fluorescein, may adversely affect the accuracy of the SpO<sub>2</sub> reading.
- NOTE!** Any condition that restricts blood flow, such as use of a blood pressure cuff or extremes in systemic vascular resistance, may cause an inability to determine accurate pulse rate and SpO<sub>2</sub> readings.
- NOTE!** Remove fingernail polish or false fingernails before applying SpO<sub>2</sub> sensors. Fingernail polish or false fingernails may cause inaccurate SpO<sub>2</sub> readings.
- NOTE!** Batteries are user replaceable. Follow local governing ordinances and recycling instructions regarding disposal or recycling of device components, including batteries.
- NOTE!** SpO<sub>2</sub> averaging is the number of pulse beats over which the SpO<sub>2</sub> value is averaged; pulse averaging is the number of seconds over which the pulse value is averaged.
- NOTE!** Hazards arising from software errors have been minimized. Hazard analysis was performed to meet EN1441: 1994.
- NOTE!** Optical cross-talk can occur when two or more sensors are placed in close proximity. It can be eliminated by covering each site with an opaque material.



## Chapter 1: Introduction

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### About the Manual

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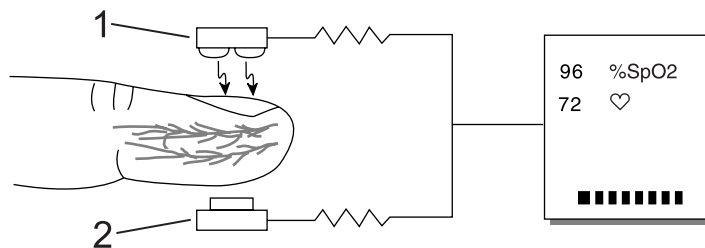
The Operation Manual provides installation, operation, and maintenance instructions for health-care professionals and other users, trained in monitoring respiratory and cardiovascular activity.

### Theory of Operation

---

The Pulse Oximeter determines SpO<sub>2</sub> and pulse rate by passing two wavelengths of low intensity light, one red and one infrared, through body tissue to a photo detector. During measurement, the signal strength resulting from each light source depends on the color and thickness of the body tissue, the sensor placement, the intensity of the light sources, and the absorption of the arterial and venous blood (including the time varying effects of the pulse) in the body tissues.

Figure 1.0: Theory of Operation



#### 1) Red and infrared LED light sources

#### 2) Detector

The Pulse Oximeter processes these signals, separating the time invariant parameters (tissue thickness, skin color, light intensity, and venous blood) from the time variant parameters (arterial volume and SpO<sub>2</sub>) to identify the pulse rate and calculate oxygen saturation. Oxygen saturation calculations can be performed because oxygen saturated blood predictably absorbs less red light than oxygen depleted blood.

Since measurement of SpO<sub>2</sub> depends on a pulsating vascular bed, any condition that restricts blood flow, such as use of a blood pressure cuff or extremes in systemic vascular resistance may cause an inability to determine accurate pulse and SpO<sub>2</sub> readings.



## Chapter 2: Intended Use and Features

---

### Intended Use

---

The Burdick® OXY 100 Pulse Oximeter is:

- A handheld, low cost monitor that is used for spot checking or attended monitoring of SpO<sub>2</sub>, pulse rate and pulse strength.
- Battery powered.

The Burdick® OXY 100 Pulse Oximeter may be used:

- In a hospital or clinical environment.
- During an emergency land transport.
- For in-home use.

The Burdick® OXY 100 Pulse Oximeter will:

- Operate accurately over an ambient temperature range of 32 to 131°F (0 to 55°C).
- Work with all Cardiac Science Corporation oximetry sensors that are referenced in this manual, and provide SpO<sub>2</sub> and pulse rate on all patients from neonate to adult.

**Note:** *The Burdick® OXY 100 Pulse Oximeter is not intended for continuous patient monitoring.*

**Note:** *There are no audible or visible patient alarms.*

### Features

---

The Burdick® OXY 100 Pulse Oximeter:

- Provides fast, reliable SpO<sub>2</sub>, pulse rate, and pulse strength measurements on any patient, from neonates to adults.
- Ideally suited for use in intensive care units, outpatient clinics, emergency rooms, during emergency air or land transport, or for in-home use.
- Portable and lightweight. Weighs only 13 ounces, with batteries (369 grams).
- Ergonomically designed to fit comfortably in the palm of your hand.
- Uses four (4) standard “AA” (type IEC LR6) alkaline batteries.
- Battery life is approximately 24 hours.
- Bright, easy-to-read LED displays indicate SpO<sub>2</sub> and pulse rate measurements.
- An eight-segment LED bar graph indicates pulse strength.
- Audible “beep” sounds with each pulse beat. Pitch of pulse “beep” corresponds to SpO<sub>2</sub> value.
- Low battery indicator lights when about 30 minutes of battery use remains. A high pitch beep also notifies the user of low battery life.
- The automatic power down turns the unit off when not in use.



## Chapter 3: Monitor Assembly

---

**⚠ WARNING!** The monitor must be used in conjunction with clinical signs and symptoms. The monitor is only intended to be an adjunct in patient assessment.

### Unpack the Monitor

---

1. Carefully remove the monitor and its accessories from the shipping carton.  
**Note:** Save all packing materials for future shipping or storage needs.
2. Refer to the supplied packing list to compare all contents that were shipped inside the carton.
3. Ensure that everything on the supplied packing list was shipped.

### Install the Batteries

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The monitor uses 4 (four) standard “AA” alkaline cells, IEC Type LR6.

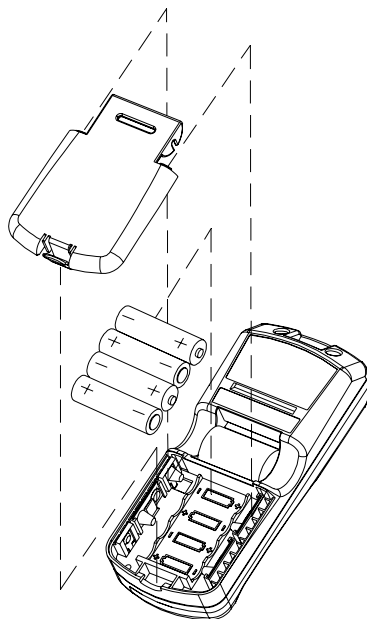
To ensure the safety of trend data during battery replacement, the monitor will hold data for about one and one half minute with no battery power.

**Note:** If disposable batteries are installed, be sure to dispose of them in compliance with your institution’s guidelines and local ordinances.

Instructions:

1. Depress the bottom tab located on the battery cover and lift up.
2. Use the negative end of each battery to compress each battery terminal spring. Continue to compress each battery until the positive terminal clears the positive tab.
3. Press all batteries down into place.
4. Insert the battery cover tabs into the slots of the monitor’s back panel.
5. Depress the bottom tab of the battery cover again until the cover is locked into place.

**Figure 3.0: Installing the Batteries.**





## Chapter 4: The Monitor

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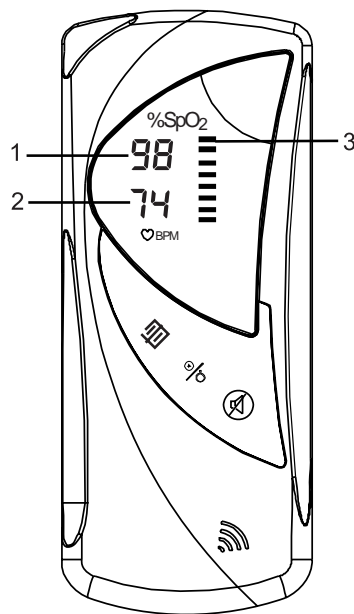
### Turn On/Off the Monitor

---

The monitor can be turned On/Off by pressing the  $\%$  key. Once the monitor is turned on the following will be displayed:

- The top segment of the pulse strength bar graph illuminates.
- The monitor's software revision is momentarily displayed.
- The patient number is momentarily displayed.

**Figure 4.1: SpO<sub>2</sub>, Pulse Rate, and Pulse Strength Bar graph.**



- 1) Patient's SpO<sub>2</sub>
- 2) Patient's Pulse
- 3) Patient's Pulse Strength

### Monitor Automatic Power Down

---

To conserve battery power, the monitor will automatically turn Off within two minutes, if:

- The finger sensor is no longer attached to the patient.
- The finger sensor is no longer connected to the monitor.

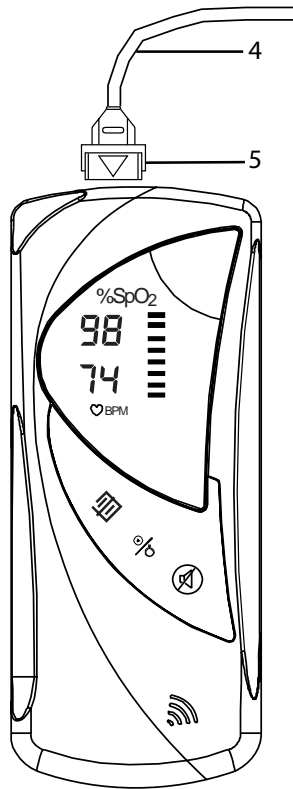
A two minute interval will be extended if the monitor is:

- Sending trend data to an external printer or PC.
- In the Production Test Mode.

## Check the Monitor's Performance

---

Figure 4.2: Connect the Oximeter/ECG Patient Simulator



**4) Cable**

**5) Connector**

This monitor does not require 'User Calibration'. To verify the monitor's performance, use the optional Oximeter/ECG Patient Simulator:

Cardiac Science Corporation catalog number: 010-1358-00

**Note:** The Oximeter/ECG Patient Simulator comes with a five foot long oximeter cable.

The Oximeter/ECG Patient Simulator provides a known SpO<sub>2</sub> and pulse rate signal to the monitor, thus allowing the monitor's performance to be verified.

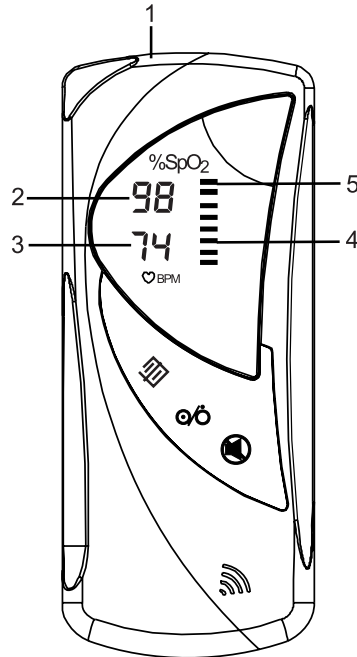
Instructions:

1. Connect the cable to the monitor (as shown in Figure 4.1).
2. Follow the instructions that were supplied with the Oximeter/ECG Patient Simulator.

## Chapter 5: Monitor Display and Keypad

### Monitor Display

Figure 5.1: Monitor Display



#### 1) Monitor Port

The finger sensor, the oximeter cable, the printer cable and the DB-9 Null Modem cable connect to this monitor port.

#### 2) SpO<sub>2</sub> Numeric Display

The monitor displays a continuous, real-time update of the patient's SpO<sub>2</sub> value in percent.

**Note:** Displayed dashes (---) mean the monitor is not able to calculate the SpO<sub>2</sub> value.

#### 3) Pulse Rate Numeric Display

The monitor displays a continuous, real-time update of the patient's pulse rate value in beats per minute.

**Note:** Displayed dashes (---) mean the monitor is not able to calculate the pulse rate value.

#### 4) Pulse Strength Bar Graph

The pulse strength bar graph "sweeps" with the patient's pulse beat. The height of the bar graph shows the patient's pulse strength.

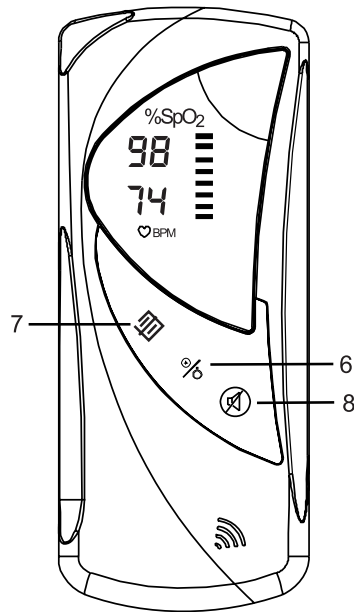
#### 5) Low Battery Indicator

The low battery indicator is the highest LED segment of the pulse strength bargraph and will flash once every second if the battery is low (with only thirty minutes remaining).


## Monitor Keypad

---


Figure 5.2: Monitor Keypad




### 6) ON/OFF Key

Press  to turn the monitor On/Off.

### 7) Clear ID Key

Press  to clear patient trend data.


### 8) Speaker Silence Key

To silence the speaker, press  for a moment.

To enable speaker operation, press  for a moment.

## Enable/Disable the Pulse Beep

---

To enable/disable the pulse beep press the  key. The appropriate message [SP Off] or [SP On] will be displayed for two seconds. After two seconds the monitor will display the normal SpO<sub>2</sub> and Pulse Rate measurements.

**Note:** The speaker state will be recorded in non-volatile memory.

## Low Battery Indicator

---

**⚠ WARNING!** When the LOW BATTERY INDICATOR flashes, you must immediately replace the monitor's batteries. Otherwise, the monitor turns itself off about 30 minutes after the highest bargraph LED begins to flash.

During a LOW BATTERY ATTENTION:

- The bargraph's highest LED segment will flash once every second.
- Every minute, a series of five audible high pitch "beeps" will sound.

**Note:** The low battery audible warning cannot be disabled by the  key.

## Chapter 6: The Finger Sensor

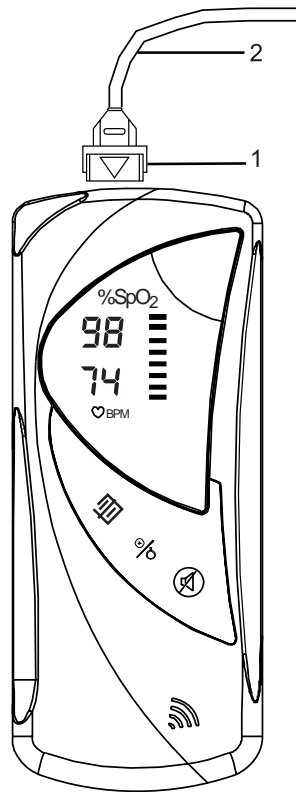
---

### Connect the Finger Sensor to the Monitor

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**⚠ WARNING!** Using a damaged finger sensor may cause inaccurate readings. If upon inspection a sensor appears damaged, do not use it. Use another finger sensor or contact an authorized repair center for help.

Figure 6.0: Connect the Oximetry Cable



- 1) Connector
- 2) Cable

With two fingers, hold the connector head, not the cable to connect the finger sensor to the monitor (as shown in Figure 6.0).

**Note:** Do not use excessive force when connecting or disconnecting cables.

**Note:** Do not use unnecessary twisting when using or storing cables.

**Note:** An optional five foot long Oximeter Cable can be purchased to extend the length of the finger sensor.

## Clean or Disinfect the Finger Sensor

---

**⚠ WARNING! Do not autoclave, ethylene oxide sterilize, or immerse the sensors in liquid.**

**⚠ WARNING! Unplug the sensor from the monitor before cleaning or disinfecting.**

Reusable sensors must be cleaned or disinfected before they are attached to the patient.

To clean the sensor:

- Use a soft cloth moistened in water or a mild soap solution.

To disinfect the sensor:

- Wipe the sensor with isopropyl alcohol.

## Check the Integrity of the Finger Sensor

---

**⚠ WARNING! If an integrity check fails, do not attempt to monitor the patient. Use another sensor, or contact the equipment dealer for help.**

The integrity of the sensor must be checked before the sensor is attached to the patient. Obstructions or dirt on the sensor's red light or detector may cause checks to fail. Make sure there are no obstructions and the finger sensor is clean.

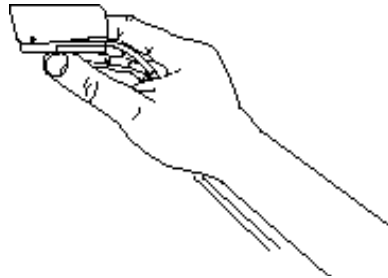
Instructions:

1. If the monitor is not already on, press the  $\%O$  key.
2. Ensure there are no obstructions and the finger sensor is clean.
3. Go to the sensor and verify that the red light is illuminated.

## Chapter 7: Attach the Finger Sensor to the Patient

- ⚠ WARNING!** Prolonged use or the patient's condition may require changing the sensor site periodically. Change sensor site and check skin integrity, circulatory status, and correct alignment at least every 4 hours.
- ⚠ WARNING!** When attaching sensors with Microfoam<sup>®</sup> tape, do not stretch the tape or attach the tape too tightly. Tape applied too tightly may cause inaccurate readings and blisters on the patient's skin (lack of skin respiration, not heat, causes the blisters).

Figure 7.0: Position the sensor cable



### Instructions:

1. Select the appropriate sensor (Please see the 'Finger Sensor Table' shown below).
2. Inspect the finger sensor to ensure that it is not damaged.
3. Clean or disinfect the finger sensor.
 

**Note:** Disposable sensors are for single-patient use only and do not require cleaning or disinfecting.
4. Position the cable parallel to the patient's arm and across the patient's palm (as shown in Figure 4.1).
5. Attach the finger sensor to the patient.

### Finger Sensor Table

PATIENT	SITE	DESCRIPTION
Adult > 45 Kg	Finger	047173: Sensor, Adult (reusable)
	Finger or Toe	047172: Sensor, Universal "Y" (reusable)
		047176: Sensor, Disposable, Adult Finger
	Ear	047174: Sensor, Ear (reusable)
Pediatric 15-45 Kg	Finger	047173: Sensor, Adult (reusable)
	Finger or Toe	047172: Sensor, Universal "Y" (reusable)
		047175: Sensor, Disposable, Ped. Finger
	Ear	047174: Sensor, Ear (reusable)
Infant 3-15 Kg	Hand or Foot	047172: Sensor, Universal "Y" (reusable)
	Toe	047170: Sensor, Wrap, Infant (reusable)
	Finger or Toe	047178: Sensor, Disposable, Infant
Small Infant >30 days < 3 Kg	Hand or Foot	047177: Sensor, Disposable, Neonate
	Foot	047171: Sensor, Wrap, Neonate (reusable)



## Chapter 8: Trend Data

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### Trend Data

---

Every thirty seconds, the monitor stores:

- One SpO2 reading.
- One pulse rate reading.

Stored readings are called Trend Data. Depending on the battery condition, the monitor remembers Trend Data for:

- Up to 99 patients.
- 14 hours of run-time.

### Trend Data and Patient (Numbers)

---





Trend Data is saved for each patient (number), every time the monitor is turned on:

- A new patient (number) will be displayed (incremented by one), if valid Trend Data was collected from a previous patient.
- The previous patient (number) will be displayed (not incremented by one), if no valid Trend Data was collected from a previous patient.

Without battery power, Trend Data will be saved for about one and a half minutes. Batteries need to be replaced within that time or Trend Data will be lost.

### Clear Trend Data

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1. Turn the monitor off, press the  key.
2. Press and hold the  key, do not release until further instructed.
3. Turn the monitor back on, press the  key.
4. [CLR] will flash on the monitors' display.
5. When [CLR] stops flashing, the monitor will display [P1].
6. [P1] means that the Trend Data is cleared, release the  key.



## Chapter 9: PC Communication Setup

### PC Trend Data Display

Trend Data can be sent to the PC by connecting the appropriate cables:

- Printer Cable
- DB-9 Null Modem Cable

**Note:** The DB-9 Null Modem Cable is an industry standard RS-232 modem cable.

### Connect the PC to the Monitor

Instructions:

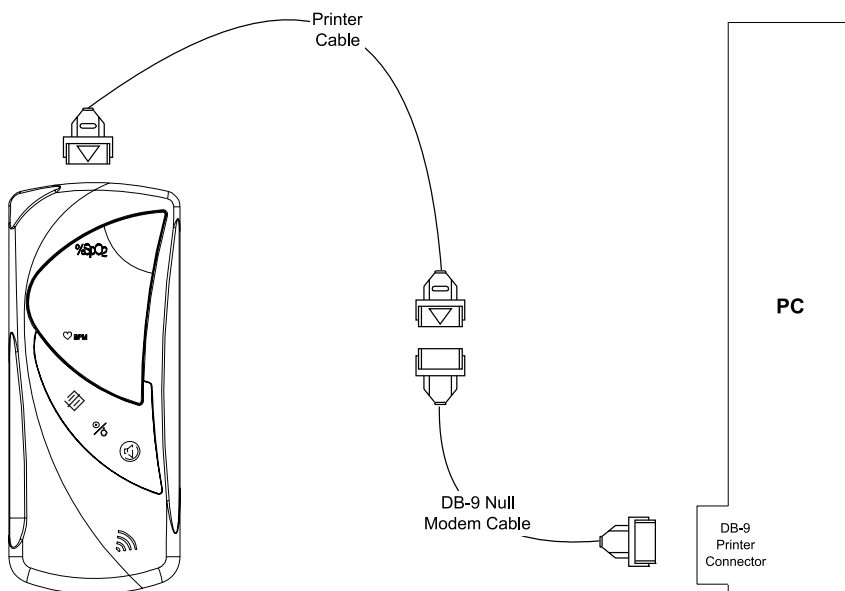
**Note:** Hold the connector head with two fingers, not the cable, when connecting cables.

**Note:** Do not use excessive force when connecting or disconnecting cables.

**Note:** Do not use unnecessary twisting when using or storing cables.

1. Power up the PC.
2. Set up the following communication software to accept the following RS-232 data format (i.g. hyper terminal) :
  - Data Type: ASCII
  - Data Format: 9600 baud, 1 start bit, 8 data bits, 1 stop bit, no parity.
3. Connect the Printer Cable to the DB-9 Null Modem Cable (as shown in Figure 9.0).
4. Connect the DB-9 Null Modem Cable to the DB-9 Printer Connector (as shown in Figure 9.0).
5. Connect the printer cable to the monitor (as shown in Figure 9.0).
6. Turn on the monitor.

Figure 9.0: PC Communication Setup





## Chapter 10: Maintenance

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### Maintenance Schedule

ITEM	HOW OFTEN	INSTRUCTION
Battery	<ul style="list-style-type: none"> <li>• Low Battery Attention indicator is flashing.</li> <li>• Audible battery indicator sounds.</li> <li>• 12-15 hours of battery use has elapsed.</li> </ul>	Follow the written instructions that are within this Operator's Manual, to install new batteries.
Reusable Sensor	Before attaching the sensor to the patient.	Follow the written instructions that are within this Operator's Manual, to clean or disinfect the reusable sensor.
Monitor	When necessary.	<ol style="list-style-type: none"> <li>1. Remove the batteries from the unit.</li> </ol> <p><b>Note!</b> Print trend data before cleaning. Trend data will be lost if batteries are disconnected more than one and a half minutes.</p> <ol style="list-style-type: none"> <li>2. Wipe the surface of the monitor with a soft, clean cloth dampened in isopropyl alcohol. Only use a cloth that is dampened, not wet.</li> </ol> <p><b>⚠ CAUTION! Do not allow isopropyl alcohol or water to enter any of the openings on the monitor.</b></p>

### Storage

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Store the monitor:

- At room temperature.
- In a dry environment.
- In the original shipping carton (if stored for an extended period of time).

Storing the monitor for a long period of time may degrade the battery capacity. Remove all batteries before storing the monitor.

Storage specifications:

Temperature:	-40°C to 75°C (-40°F to 167°F)
Relative Humidity:	10% to 95% (noncondensing)



## Chapter 11: Troubleshooting

PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTION
No pulse shown on the bargraph.	The finger sensor is disconnected from the monitor.	Connect the finger sensor to the monitor.
	The Oximeter cable is disconnected from the monitor.	Connect the oximeter cable to the monitor.
	The finger sensor is incorrectly positioned on the patient.	Reposition the finger sensor.
	Poor patient perfusion.	Reposition the finger sensor.
	A defective finger sensor or cable.	Try a new sensor or contact your authorized repair center for help.
Pulse rate is erratic, intermittent, or incorrect.	The finger sensor is incorrectly positioned.	Reposition the finger sensor.
	Patient motion	The patient must remain still to obtain an accurate measurement.
SpO <sub>2</sub> value is erratic, intermittent, or incorrect.	Poor patient perfusion.	Reposition the finger sensor.
	Patient motion.	The patient must remain still to obtain an accurate measurement.
The Pulse Oximeter will not turn on.	Batteries are weak.	Replace the batteries.
	Batteries are not installed.	Install new batteries.
	Batteries are not correctly installed.	Remove batteries and reinstall them.
The monitor automatically turns off without notice.	The monitor automatically turns off two minutes after the sensor is removed from the patient, or after the sensor is disconnected from the oximeter. This feature extends the battery use time.	None.
	Batteries are weak/dead.	Replace the batteries.
E00	ROM Error	Contact Cardiac Science Corporation, Technical Support.
E01	RAM Error	Contact Cardiac Science Corporation, Technical Support.

## EMI Interference

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**⚠ CAUTION:** This device has been tested and found to comply within the limits for medical devices to IEC 601-1-2:1993, EN 60601-1-2:1994, and the Medical Device Directive 93/42/EEC. These limits are designed to provide reasonable protection against harmful interference in a typical medical installation. However, because of the proliferation of radio-frequency transmitting equipment and other sources of electrical noise in the health-care and home environments (for example, cellular phone, mobile two-way radios, electrical appliances), it is possible that high levels of such interference due to close proximity or strength of a source, may result in disruption of performance of this device.

The monitor is designed for use in environments in which the signal can be obscured by electromagnetic interference. During such interference, measurements may seem inappropriate or the monitor may not operate correctly.

The monitor generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with these instructions, may cause harmful interference with other devices in the vicinity. Disruption may be evidenced by erratic readings, cessation of operation, or other incorrect function. If this occurs, the site of use should be surveyed to determine the source of this disruption, and actions taken to eliminate the source: Turn equipment in the vicinity off and on to isolate the offending equipment. Reorient or relocate the other receiving device.

Increase the separation between the interfering equipment and this equipment. If assistance is required, contact Cardiac Science Corporation, Technical Support Department or your local Cardiac Science Corporation representative.

## Chapter 12: Optional Supplies and Accessories

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CAT. NO	DESCRIPTION	QUANTITY
047176	Sensor, Oximetry, Disp., Adult Finger	10/box
047175	Sensor, Oximetry, Disp., Ped. Finger, 15-45 Kg	10/box
047177	Sensor, Oximetry, Disp., Neonate, < 3 Kg	10/box
047178	Sensor, Oximetry, Disp., Infant, 3-15 Kg	10/box
010-1358-00	Simulator & Cable , Oximeter, 5 ft.	each
010-1359-00	Manual, Operation OXY 100	each
010-1373-00	Manual, Service OXY 100	each
047170	Sensor, Oximetry, Wrap, Infant, 3-15 Kg	each
047171	Sensor, Oximetry, Wrap, Neonate, < 3 Kg	each
047172	Sensor, Oximetry, Universal "Y"	each
047173	Sensor, Oximetry, Finger	each
010-1335-00	Strips, Adhesive	40/pkg
047174	Sensor, Oximetry, Ear	each
010-1336-00	Tape, Attachment, Neonatal	50/pkg
010-1337-00	Tape, Attachment, Infant	50/pkg
010-1340-00	Posey Wrap, Attachment, Universal "Y"	10/pkg.
047186	Cable, Patient	each
010-1350-00	PC Adapter Cable	each
010-1351-00	Cable, Printer Interface	each
010-1353-00	Boot Protective OXY 100	each
010-1352-00	Case, Carrying	each

### Ordering Information:

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For ordering information, contact your local distributor or the Cardiac Science Corporation customer service department.

Cardiac Science Corp.  
500 Burdick Parkway  
Deerfield, Wisconsin 53531  
U.S.A.

Phone: (608) 764-7179  
Toll-Free: (800) 284-4362  
Fax: (608) 764-7191

Website: [www.cardiacscience.com/burdick](http://www.cardiacscience.com/burdick)  
Email: [info@cardiacscience.com](mailto:info@cardiacscience.com)



## Chapter 13: Specifications

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### Equipment Classification

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Type of Protection Against Electric shock:	Internally Powered
Mode of operation:	Continuous
Degree of Protection Against ingress of Liquids:	IPX1, drip proof
Degree of Mobility:	Portable
Degree of Protection Against Electric Shock:	Type BF
Safety Requirements:	EN60601-1: 1990

### Displays, Indicators and Keys

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SpO <sub>2</sub> :	LED numeric display, 0.30 inches (7.62 mm) high
Pulse Rate:	LED numeric display, 0.30 inches (7.62 mm) high
Pulse Strength:	Logarithmically scaled 8-segment LED bargraph
Low Battery Indicator:	1 Segment LED
Keys:	<ul style="list-style-type: none"> <li>% On/Off key</li> <li> CLEAR ID key</li> <li> Speaker Silence Key</li> </ul>

### SpO<sub>2</sub>

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Range:	0 - 99% Functional SpO <sub>2</sub> (1% increments)
Accuracy:	±2 at 70 - 99% less than 70% is unspecified
Alarms:	None
Averaging:	8 pulse beat average
Display Response:	The display is to functional saturation. The pulse strength bar graph is not proportional to pulse volume.
Display Update Rate:	1 Hz (SpO <sub>2</sub> ); 60 Hz (pulse strength)
Calibration:	Factory calibrated over the range of 50% to 100% SpO <sub>2</sub> using human blood samples to functional saturation. Test methods available upon request. No in-service calibration is required.
Sensor:	<ul style="list-style-type: none"> <li>Red 660nm, 2mW (typical)</li> <li>Infrared 905nm, 2-2.4mW (typical)</li> </ul>

## Pulse Rate

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Range:	30-254 BPM (1 bpm increments)
Accuracy:	±2% or 2 BPM, which ever is greater
Averaging:	8 second average
Display Update Rate:	1 Hz

## Optional Printer

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- 1 inch wide paper thermal printer.
- 15 characters per line with two dots between symbols.
- 5x7 dot characters.

## Power Printer

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Four standard "AA" alkaline cells (IEC Type LR6).

## Battery Life

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Alkaline Cells: 24 hours under normal use.

## Dimensions

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Width:	2.75 inches (69.85 mm)
Height:	6.6 inches (167.64 mm)
Depth:	1.43 inches (36.322 mm)
Weight:	13 ounces (369 grams) with batteries

## Environmental Specifications

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Operating Temperature:	0 - 55° C (32 - 131° F)
Storage Temperature:	-40 - 75° C (-40 - 167° F)
Relative Humidity:	10 - 95% (storage), non-condensing
	15 - 95% (operating), non-condensing





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