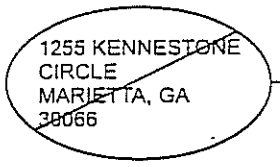
HOME OPERATOR'S MANUAL

SMARTMONITOR®

Models 900S, 900SL, 970S, 970SE

Type 03



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577-0922-30
Rev. B

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I. USER/OWNER RESPONSIBILITY

This Healthdyne equipment and the authorized accessories are designed to function as described in the operator's manual. **The user(s) of this equipment should not use parts that have failed, exhibit excessive wear, are contaminated, or otherwise ineffective. The monitor and its accessories should not be modified.**

The user/owner of this equipment shall have the sole responsibility and liability for any injury to persons or damage to property (including this equipment) resulting from:

1. Operation not in accordance with supplied operating instructions;
2. Maintenance not in accordance with authorized maintenance/operational instructions;
3. Service by anyone other than a factory-authorized service representative;
4. Modification of the equipment or accessories; or
5. Use of damaged or unauthorized components and accessories.

II. INTRODUCTION

This manual provides all the information needed to operate Healthdyne Models 900S, 900SL, 970S, and 970SE SmartMonitors. Carefully read and understand this manual before using any of the SmartMonitors mentioned above. Words that appear in *italic* are defined in the Glossary in the back of this manual. **Federal law restricts this device to sale by, or on the order of, a licensed physician. The instrument should be used under the supervision of a physician.**

How the SmartMonitor Operates

The SmartMonitor is designed to monitor *respiration* (breathing) and cardiac (heart) activity. To measure respiration, two *electrodes* are placed on the chest under the arms. As the chest moves during respiratory effort, the resistance (opposing force) between the electrodes changes. The changes are picked up by the SmartMonitor and used to detect breathing effort. If the SmartMonitor does not detect these changes in breathing effort, the APNEA light will come on and the audible alarm will sound. The electrodes on the chest also pick up the electrical changes produced by the heart. The SmartMonitor is thus able to measure the heart rate.

****WARNING****

Healthdyne SmartMonitors can detect certain types of apneas and heart activity. (The monitor will detect the presence of apnea unless the baby is choking or moving his or her body.) SmartMonitors will not prevent or restore the loss of breathing and heart activity. The SmartMonitor will not prevent death. Therefore, anyone using this device to monitor an infant should be trained in current infant Cardiopulmonary Resuscitation (CPR), which is a proper way to restore breathing and heart activity. Refer to Chapter XI. Warnings and Cautions, p. 50 for additional information.

How the Alarms Operate

The design of the SmartMonitor allows for different limits to be set by the doctor for each of the patient alarms. Whenever the patient's breathing effort and heart rate are not within these set boundaries, an indicator light will turn on and the alarm will sound.

The Models 900S, 900SL, 970S, and 970SE SmartMonitors have two types of alarm sounds:

1. a "beeping" alarm indicating one of the following alarm events: APNEA, HIGH or LOW HEART, or Low Breath Rate.
2. a constant alarm indicating LOOSE CONNECTION, LOW BATTERY, FULL MEMORY (or Memory Almost Full) events, or an Accidental Power-Off.

CAUTION

Test to see if you can hear the alarm from different rooms while there is noise in your house. Sound the alarm on the SmartMonitor and move to different areas in your home. If the alarm is not loud enough to hear around the home, ask your equipment provider for a Remote Alarm. This device will allow you to hear the alarm from a different room from where the Monitor is located.

How the Internal Memory Operates

The SmartMonitor contains an electronic memory system which automatically documents monitor usage and alarms. The SmartMonitor also has a dual-level memory alarm. When the memory is 80% full, the SmartMonitor will alarm and can be silenced by pressing the RESET button. Monitoring can continue. When the memory is 100% full, the alarm sounds again. It can still be silenced by the RESET button. Monitoring can continue; however, the earliest events recorded will be replaced with the most recent events.

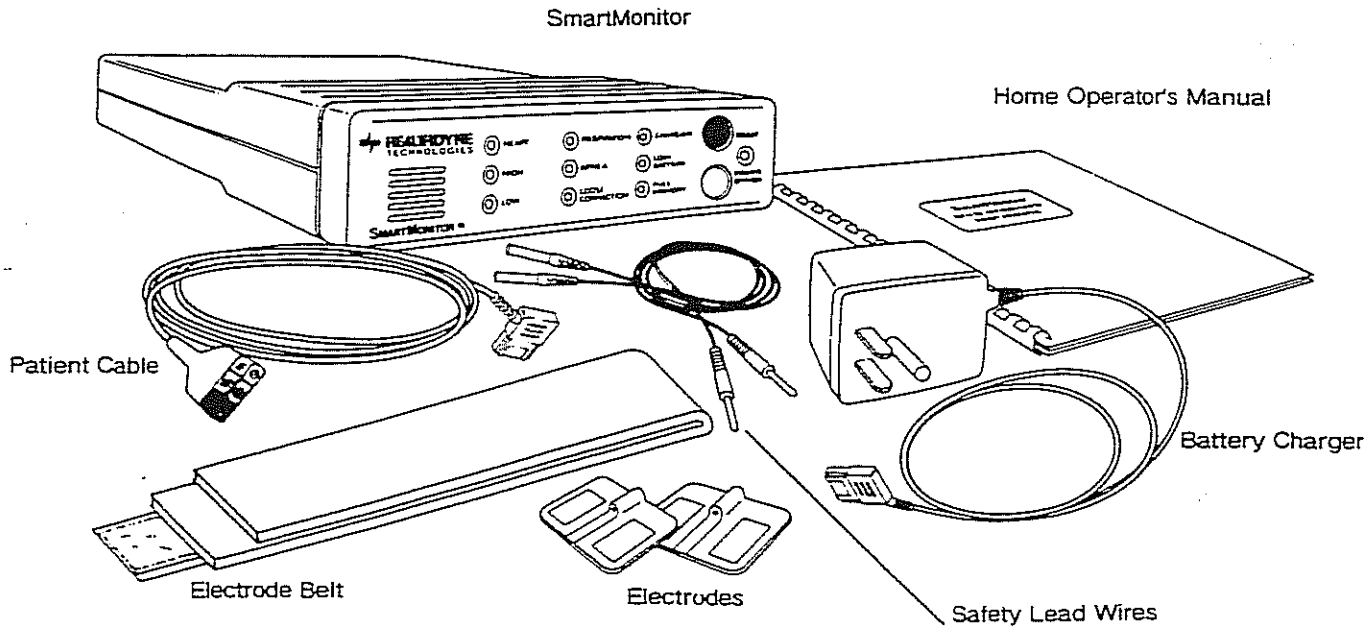
III. UNPACKING AND INSPECTING

When you receive the SmartMonitor, unpack the shipping case and carefully examine the contents. Make sure that you have all the necessary items and that they are not damaged. Anything missing or damaged should be reported to your dealer.

The package should include the following:

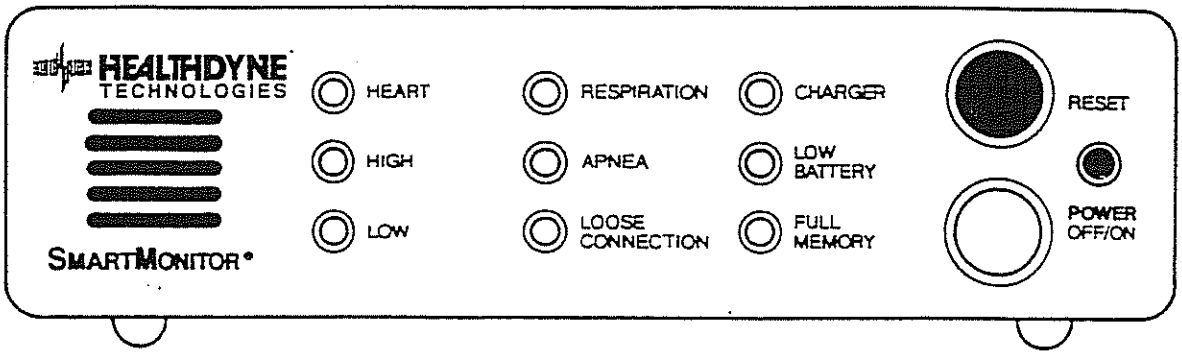
(1) SmartMonitor
(1) 901 Soft Carrying Case
(1) 908 Patient Cable
(1) 913 Battery Charger
(1) 922-3 *Home Operator's Manual*

Your dealer will provide a supply of electrodes, safety lead wires, and reversible pink/blue electrode belts.



IV. FEATURES

Front-panel Features



POWER OFF/ON
Push the white POWER OFF/ON button to turn the SmartMonitor on. This will cause all the lights and the alarm to come on briefly. After a ten-second pause, the alarm lights will turn off and monitoring will begin. To turn the SmartMonitor off, follow these steps:

- Press and **hold** the blue RESET button.
- Press and release the white POWER OFF/ON button.
- Wait two seconds, then release the RESET button.

You must first press and hold the RESET button. If you press the POWER OFF/ON button first, the alarm will sound continuously ("sibling" alarm). If this should happen, press the POWER OFF/ON button again - the SmartMonitor has to detect a power ON before it will allow another power OFF. Then follow the steps stated above to turn the SmartMonitor off.

POWER INDICATOR
The green POWER indicator light will come on and will stay on for as long as the monitor is on.

RESET
The blue RESET button is used to reset the alarm lights on the SmartMonitor. The alarm lights need to be reset after the conditions that caused the light(s) to come on are corrected. The RESET button is also used to silence the FULL MEMORY (or Memory Almost Full) and LOW BATTERY Warning sound alarms. Patient alarms cannot be silenced with the RESET button. The sound alarm will stop when the patient signals are within the alarm limits.

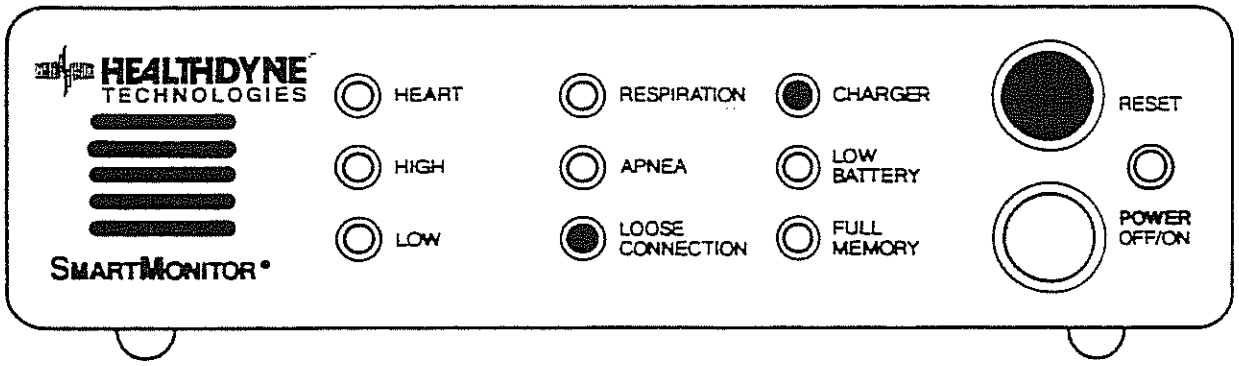
LOOSE CONNECTION

The red LOOSE CONNECTION light and the audible alarm may come on continuously when there is a problem with any of the following:

1. lead wires,
2. electrodes,
3. electrode belt,
4. patient cable, or
5. connections between the patient's skin, the electrodes, the lead wires, the patient cable, and the SmartMonitor

After the problem has been corrected, the alarm will stop. However, the red indicator light will remain on until the RESET button is pressed.

If you are using a Body Position Sensor, the red LOOSE CONNECTION light (only) will flash when there is a problem with the Body Position Sensor or its connecting cable. After the problem has been corrected, the red indicator light will turn off automatically.



CHARGER

The yellow CHARGER light is on when the Battery Charger is plugged into an active outlet and connected to the SmartMonitor.

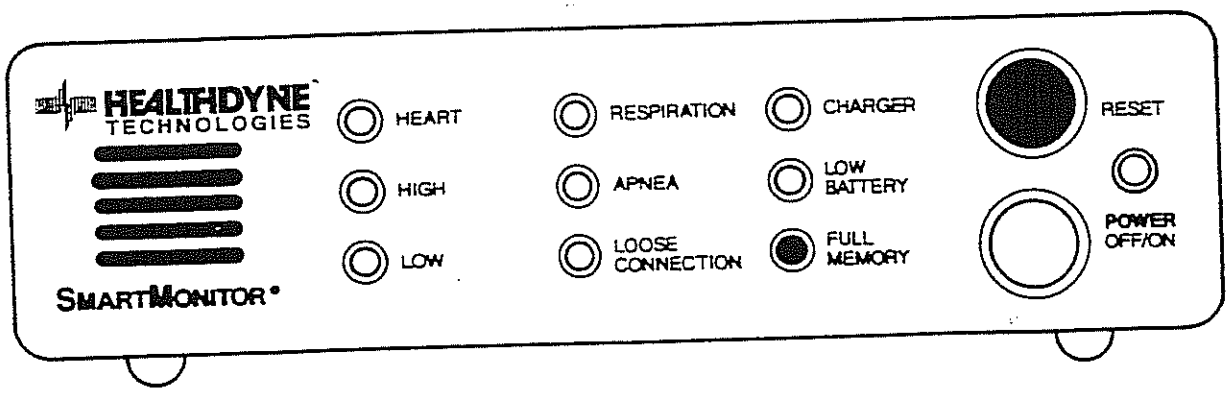
80% FULL MEMORY

When the SmartMonitor's memory is about 80% full, the light will come on and the alarm may sound continuously. The alarm will sound only if your dealer has programmed your SmartMonitor to do so. Pressing the RESET button will silence the alarm. The FULL MEMORY light will change from constant to flashing for two seconds every 30 seconds. It will stop flashing when this condition is corrected. (The memory needs to be transferred and then cleared).When your monitor's memory is 80% full, you can still continue monitoring.

100% FULL MEMORY

When the SmartMonitor's memory is 100% full, the FULL MEMORY light will change from flashing to constant and the alarm will sound again. The alarm will sound only if your dealer has programmed your SmartMonitor to do so. Press the RESET button to silence the alarm. The monitor erases old data after the memory is 100% full, but monitoring can continue. The most recent information will continue to be stored in the memory.

NOTE: If a FULL MEMORY or Memory Almost Full condition exists, the alarm will sound every time the SmartMonitor is powered on. The alarm will sound only if your dealer has programmed your SmartMonitor to do so. Press the RESET button to silence the alarm.



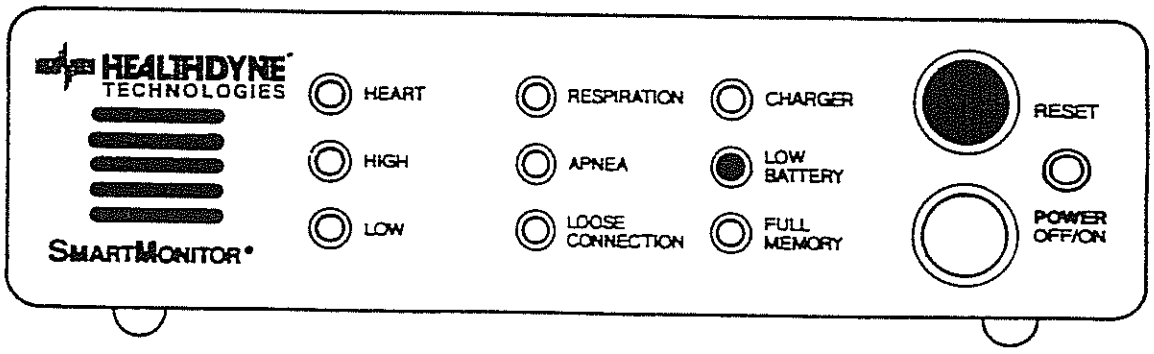
LOW BATTERY

Fully charged batteries will operate the monitor for about 24 hours. If the battery voltage is almost too low for the SmartMonitor to operate properly, two events will occur. The alarm will sound **continuously** and the red LOW BATTERY light will come on. Press the RESET button to silence the alarm. This will cause the red light to start flashing two seconds on, 28 seconds off. This will continue until the batteries reach a minimal charge level.

To charge the batteries, plug the Battery Charger into the back of the SmartMonitor (POWER INPUT) and into a properly grounded three-pronged electrical outlet. The outlet must not be connected to a wall switch. Do not use three-prong to two-prong "cheater" plug adaptors.

The red LOW BATTERY light will go off only after the batteries reach a minimal charge level. Fully drained batteries require about 24 hours to recharge. Less time is needed for partially drained batteries. For each hour the batteries are in operation, they should be charged for at least 1 hour. Life of a fully charged battery is about 24 hours.

If the LOW BATTERY alarm condition is not corrected and monitoring continues without connecting and plugging in the Battery Charger, the LOW BATTERY alarm will sound again and the light will remain constant. **Under these conditions, the SmartMonitor's batteries do not have enough power to continue to operate properly and *automatic power shutdown* will occur.** The Battery Charger can be used at this time to charge the batteries; however, the only way to silence the audible alarm is to use the proper Power-Off sequence (press and hold the RESET button, press and release POWER OFF/ON, wait two seconds, and then release the RESET button).



CAUTION

If the SmartMonitor is not being portably operated, you should keep the Battery Charger connected and plugged into a properly grounded outlet at all times. The batteries cannot be overcharged.

RESPIRATION

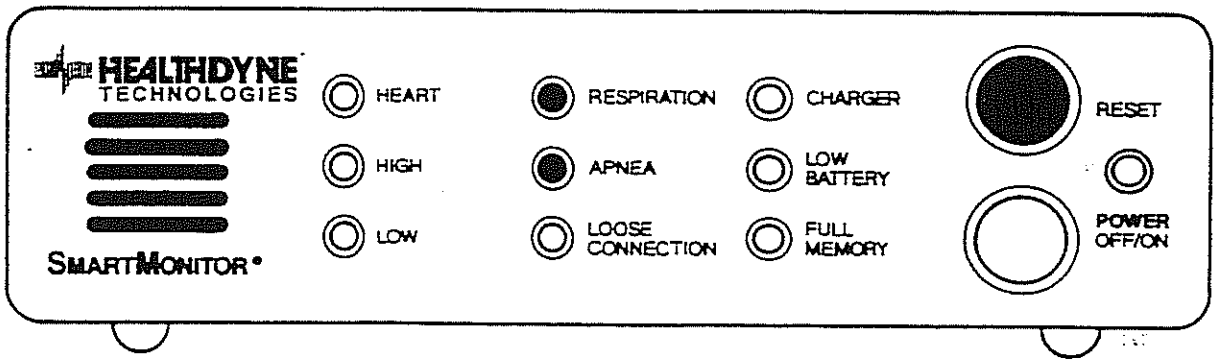
The green RESPIRATION light will blink with each breath movement that the SmartMonitor detects. The light should blink only once for each breath. However, it may flash additional times when your baby is moving. Listen and watch your baby breathe. At the same time observe that the monitor's RESPIRATION light flashes for each breath taken by your baby. If this light flashes more or fewer times than the baby breathes, contact your dealer immediately.

APNEA

The red APNEA light will come on and the alarm will "beep" once per second when the SmartMonitor detects a pause in breathing which is longer than the limit set by your doctor. When the SmartMonitor detects that breathing has started again, the "beeping" alarm will stop, but the red light stays on until you press the RESET button.

WARNING

Some apneas may be missed by apnea monitors. The monitor may mistake body movement for breathing. If a baby has apnea due to choking (*obstructive apnea*), the monitor could mistake movement caused by choking for breathing. However, the monitor will detect most apneas not caused by choking or movement.



Your doctor may also want the APNEA light to signal Low Breath Rate. If the breath rate falls below the Low Breath Rate setting (but pauses are not long enough to cause an APNEA alarm), the APNEA light will flash twice per second, and the alarm will "beep" once per second. If the SmartMonitor detects a pause in breathing during a Low Breath Rate alarm, the APNEA light will change from flashing to constant. Use of the Low Breath Rate alarm is recommended with older patients only.

HEART

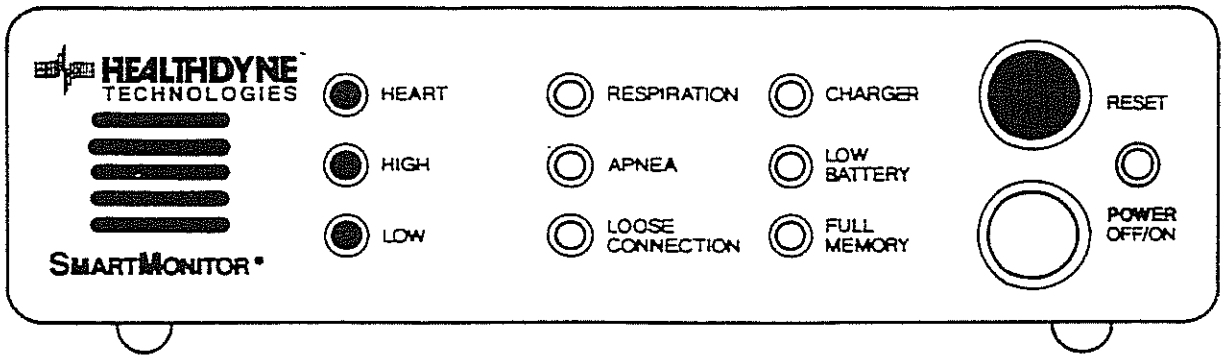
The green light marked "HEART" blinks with each heartbeat the SmartMonitor detects.

HIGH

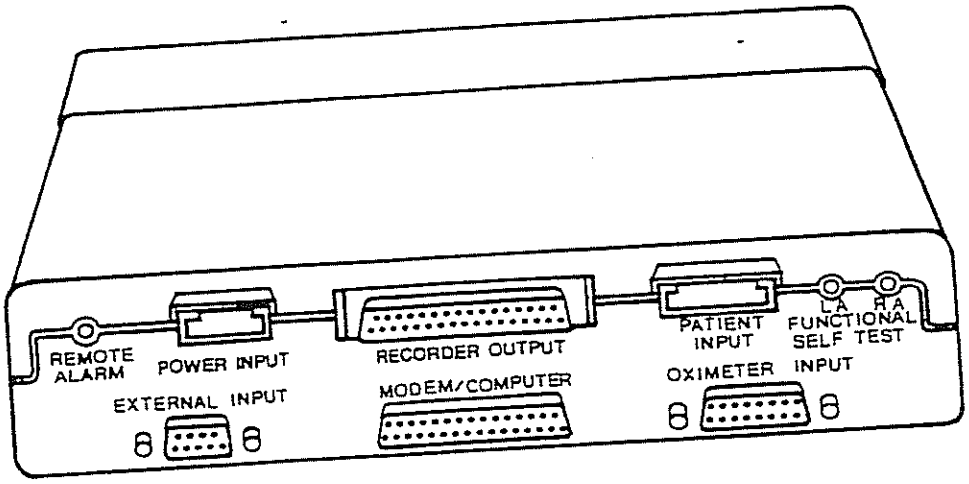
The red light marked "HIGH" will come on and the alarm will "beep" twice per second when the SmartMonitor determines that the heart rate is higher than the limit set by your doctor. The "beeping" alarm will stop when that condition no longer exists, but the red light stays on until you press the RESET button.

LOW

The red light marked "LOW" will come on and the alarm will "beep" once per second when the SmartMonitor determines that the heart rate is lower than the limit set by your doctor. The "beeping" alarm will stop when that condition no longer exists, but the red light stays on until you press the RESET button.



Rear-panel Features



REMOTE ALARM OUTPUT

The REMOTE ALARM OUTPUT connector is used with the Healthdyne Model 990 (battery-powered) Remote Alarm or the Model 16100 (line-powered) Remote Alarm. Either Remote Alarm can be used when you want to monitor the audible alarm from a different room.

POWER INPUT

The POWER INPUT connector is used with the Healthdyne Model 913 Battery Charger. The Battery Charger should be used whenever the SmartMonitor is not being used portably (on battery power only).

RECORDER OUTPUT

The RECORDER OUTPUT connector is used with various recording equipment that may be used occasionally by your dealer.

PATIENT INPUT

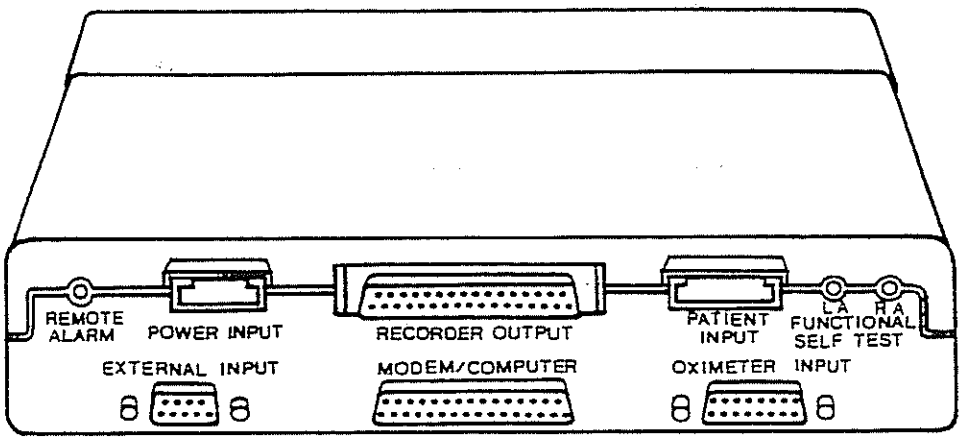
The PATIENT INPUT connector is used with the Healthdyne Model 908 Patient Cable.

FUNCTIONAL SELF-TEST OUTPUT

The FUNCTIONAL SELF-TEST connectors are used with Healthdyne Model 9520 Lead Wires when performing the *Functional Self-Test.* Refer to pages 20-23 for *Functional Self-Test* instructions.

OXIMETER INPUT

The OXIMETER INPUT connector may be used with the Healthdyne Model 9130 or 9130N Cable to interface a Healthdyne 930 Oximeter to the memory system of the SmartMonitor. Refer to Chapter VIII, Using an Oximeter, on page 28 for details.



EXTERNAL INPUT

The EXTERNAL INPUT connector may be occasionally used with the Model 9175 Body Position Sensor cable or with external monitoring equipment. External patient signals (other than oximetry) are connected to the internal memory system of the SmartMonitor through the EXTERNAL INPUT connector (and thus recorded along with the SmartMonitor's signals).

MODEM/COMPUTER

The MODEM/COMPUTER connector may be used with the Healthdyne Memory Module 980/982, or the Model 9140 or 9141 Cable when connected to a phone *Modem.*

Special Features

ACCIDENTAL POWER-OFF

The SmartMonitor has an accidental Power-Off alarm (often referred to as a "sibling" alarm). This feature causes a continuously sounding alarm if the SmartMonitor is not turned off in the correct way:

- Press and **hold** the blue RESET button.
- Press and release the white POWER OFF/ON button.
- Wait two seconds, then release the RESET button.

To correct an accidental Power-Off alarm, press the POWER OFF/ON button to turn the SmartMonitor power back ON. Then follow the correct Power-Off procedure above.

FUNCTIONAL SELF-TEST

The SmartMonitor has a special feature called the *Functional Self-Test*. This test is the best way to quickly determine if the SmartMonitor and the accessories are operating properly. Refer to pages 20-23 for FUNCTIONAL SELF-TEST instructions.

The Functional Self-Test should be performed:

1. When the equipment is first set up,
2. When the patient cable or lead wires are changed,
3. On a regular basis (as a general rule, at least once a week).

V. OPERATING INSTRUCTIONS

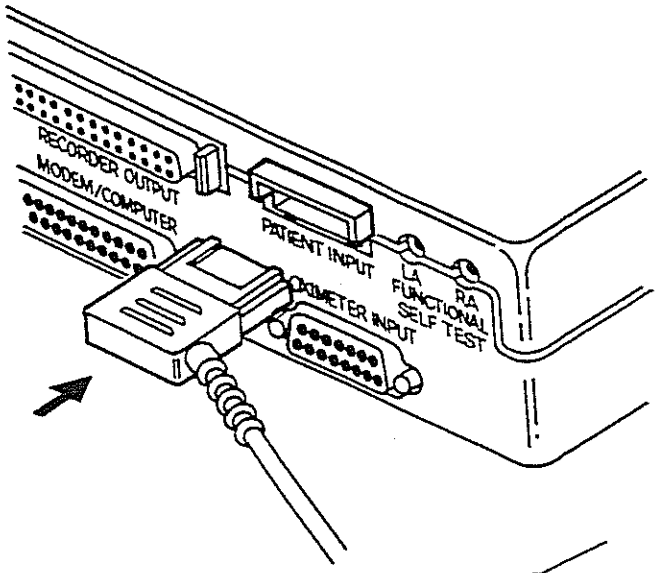
CONNECTIONS: PATIENT CABLE, LEAD WIRES, ELECTRODES, CHARGER

****WARNING****

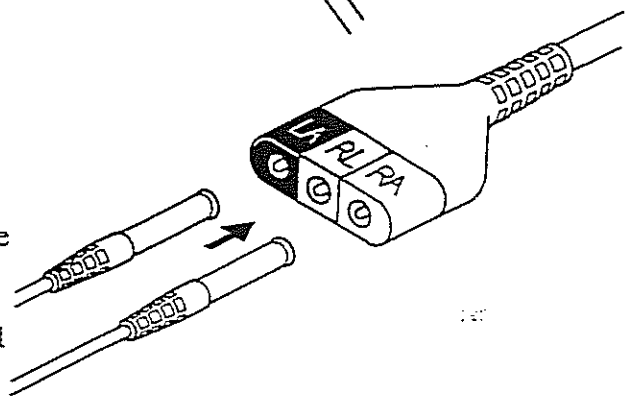
Do not use non-safety style lead wire and patient cable configurations with this monitor. Using non-safety style lead wire and patient cable configurations may pose a risk of severe electrical shock or death. Follow the instructions below to make sure that proper lead wire and patient cable connections are made. Use only Healthdyne safety lead wire and patient cable configurations with Healthdyne apnea monitors.

NOTE: If monitoring more than one infant, make sure the monitors, patient cables, and lead wires are at least 3 feet apart.

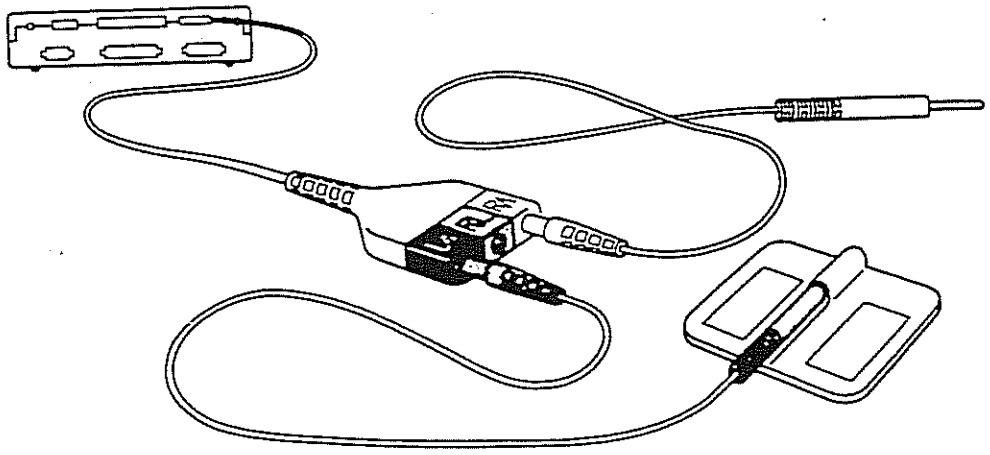
Step 1. Connect the patient cable to the SmartMonitor. One end of the patient cable has a metal plate on the top side. With the top side up, insert the cable into the socket on the back of the SmartMonitor marked "PATIENT INPUT." Push until you feel the connector snap into place.



Step 2. Connect the lead wires to the patient cable. The larger end of the patient cable has three openings. Take the WHITE lead wire and insert it into the opening marked "RA." Take the BLACK lead wire and insert it into the opening marked "LA." Make sure the lead wires are fully inserted into the patient cable. (Firmly push the lead wires until the socket "snaps" into place.) To remove lead wires, grasp and pull at the *strain relief area* located near the connecting tip. **Do not grasp the wire.**
NOTE: Use of the third (Green/"RL") electrode and lead wire is normally not required, but may help reduce excessive false apnea alarms. Refer to Warnings and Cautions on page 43 for details.

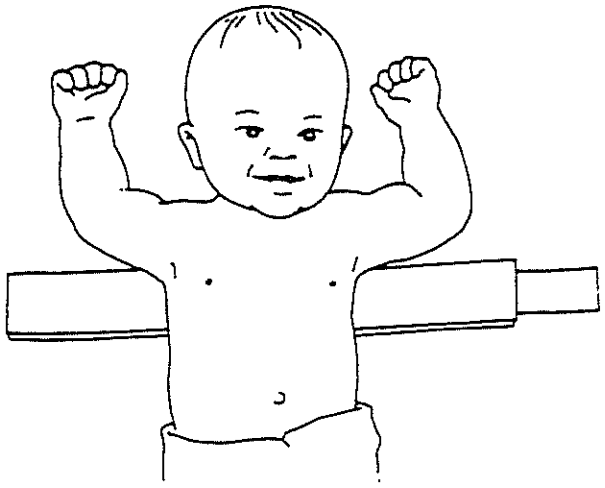


Step 3. Connect the lead wires to the electrodes.
Insert a lead wire into the Velcro™-side of each electrode.
Make sure the metal tips of the lead wires are fully inserted.

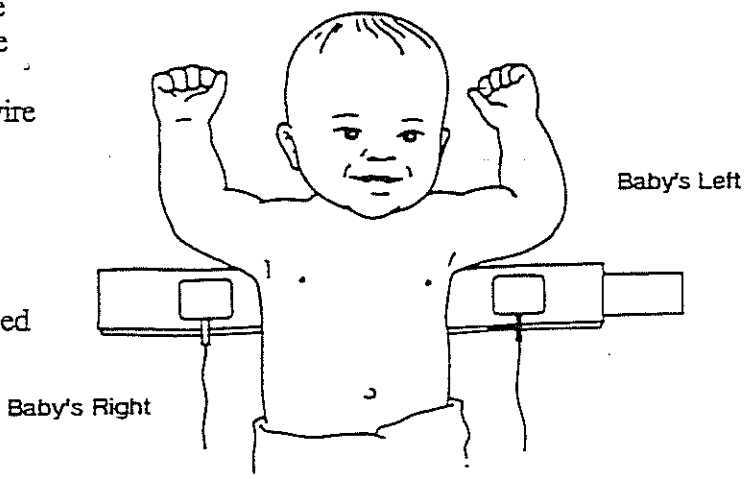


INFANT/PEDIATRIC PLACEMENT

Step 4. Place the electrode belt on a flat surface.
Place the baby's back on the belt so the belt is aligned with the baby's nipples.



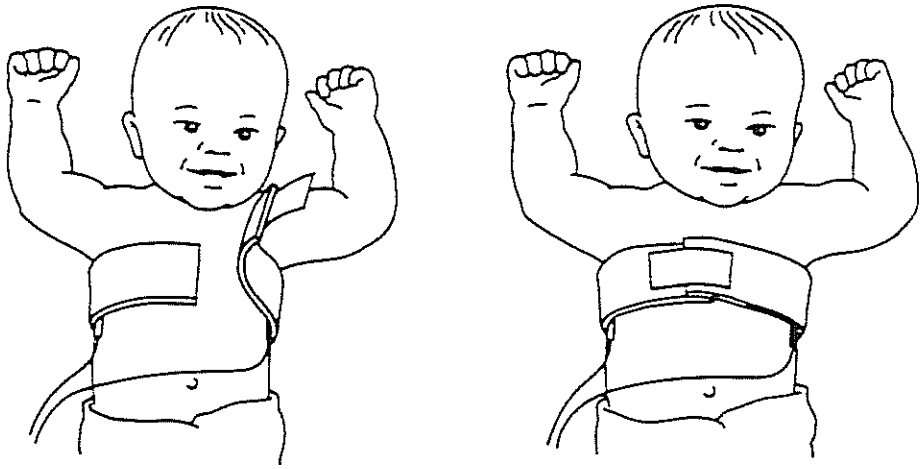
Step 5. Place the electrodes on the belt.
Place the electrodes, Velcro-side down, on the belt. The electrode with the WHITE lead wire should be on the baby's right side (not your right). The electrode with the BLACK lead wire should be on the baby's left side.



Place the electrodes far enough apart so when the belt is wrapped around the baby one electrode will be located on each side of the chest (underneath the armpit, just below or lined up with the nipples). This is a recommended "starting" position. Other electrode locations may be required for better breath detection. Contact your dealer if APNEA alarms occur while your baby is breathing.

Step 6. Wrap the electrode belt around the baby.
Wrap the belt around the baby's chest and fasten it with the Velcro tab. The belt should be snug enough so that only two fingers can be inserted between the belt and the baby. With newborns and very small babies, you will have to shorten the belt by cutting off a small part.

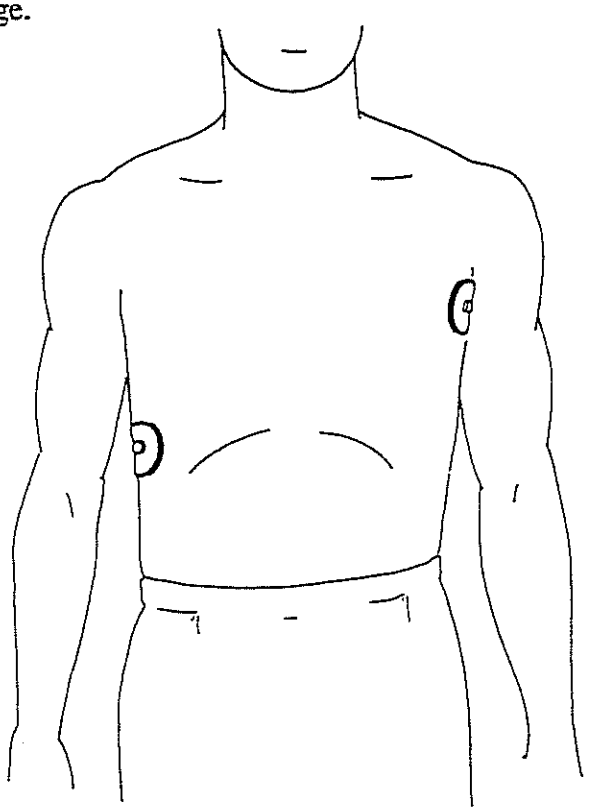
NOTE: Steps 4-6 describe only one method for electrode placement and positioning. Your dealer may show you another method.



ADULT PLACEMENT

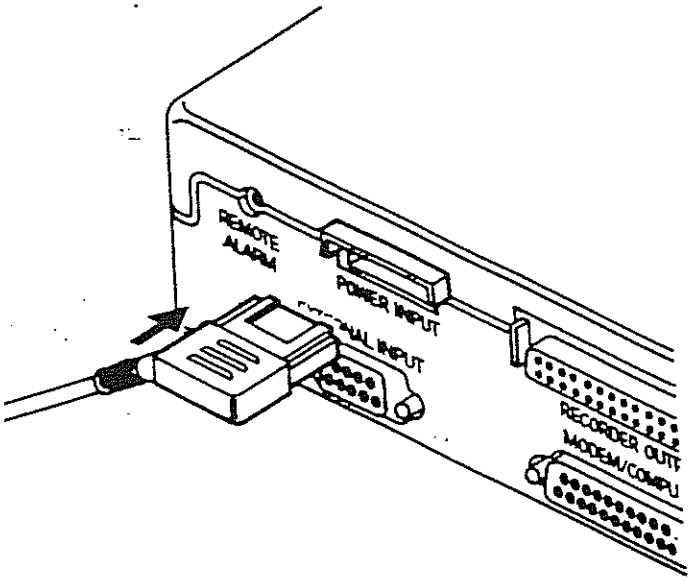
When using disposable electrodes, recommended initial electrode positioning is under the left armpit, in line with the nipples; and under the right armpit, near the lower portion of the rib cage.

Position the electrode with the **BLACK** lead wire under the left armpit in line with the nipples. Position the electrode with the **WHITE** lead wire under the right armpit near the lower portion of the rib cage.

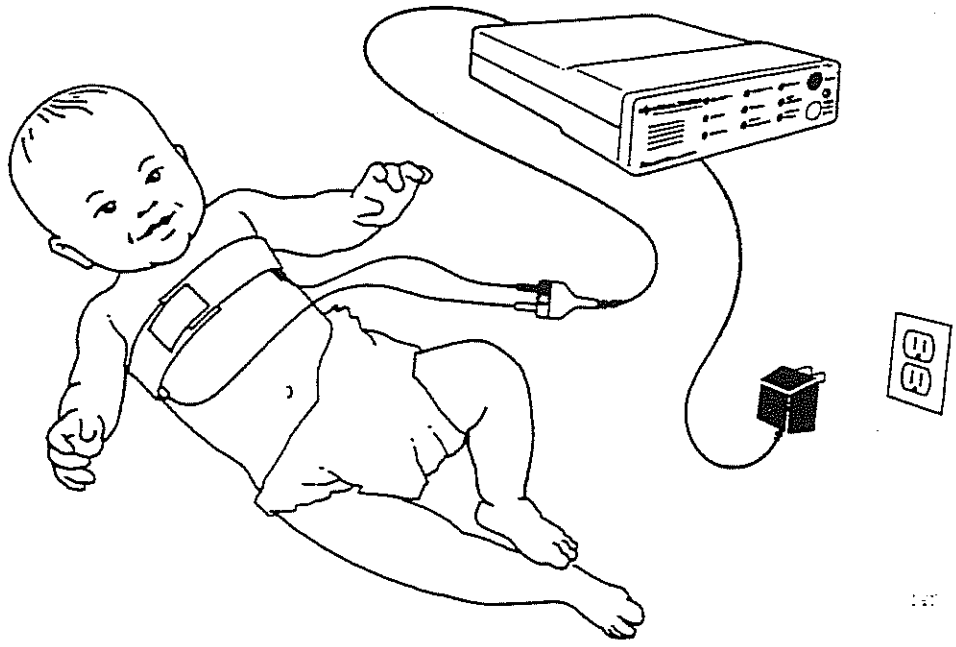


NOTE: This is only one method for electrode placement and positioning. Your dealer or doctor may show you another method.

Healthdyne provides clip-on lead wires, but has not approved the use of any particular brand of disposable electrodes. Healthdyne recommends the use of reusable hydrogel electrodes Models 9510 and 9515.



Step 7. Connect the Battery Charger.
Insert the flat connector end of the Battery Charger (metal side up) into the socket on the back of the SmartMonitor marked "POWER INPUT." Push until you feel the connector snap into place. Then plug the Battery Charger into a properly grounded three-pronged power outlet. **Do not plug the Battery Charger into an outlet controlled by a wall switch.**



Step 8. Turn the SmartMonitor on.
Push the POWER OFF/ON button. The lights on the front of the SmartMonitor and the alarm should come on briefly. This is a routine test of the alarm sound. Within ten seconds, the green RESPIRATION and HEART lights should begin to blink (If the lights do not blink, you have not attached the electrode belt properly and made complete connections).

NOTE: The green RESPIRATION light will blink once for each breath that the SmartMonitor detects. The light should blink only once for each breath, although it may flash more times when your baby is moving. Listen and watch your baby breathe. If this light flashes more or fewer times than your baby breathes, contact your dealer immediately.

PORTABLE USE

The SmartMonitor is easily adapted to portable operation. The steps you take in setting up the SmartMonitor are the same for portable operation with one exception--the Battery Charger is not used during portable operation. Instead, the SmartMonitor will rely on the batteries for power. Make sure the batteries are fully charged before taking the SmartMonitor off the Battery Charger (24 hours should recharge fully drained batteries, though less time is needed for partially drained batteries. For each hour the batteries are in operation, they should be recharged for at least 1 hour). When the batteries are fully charged, the SmartMonitor can be portably operated for approximately 24 hours (depending upon several factors such as number of alarms, etc.). However, Healthdyne recommends that the SmartMonitor be used with the Battery Charger whenever possible.

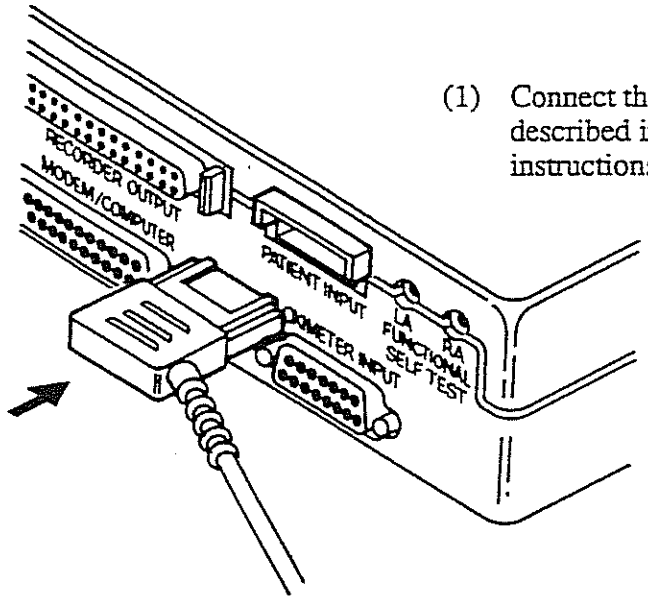
****CAUTION****

Make sure that the speaker on the front of the SmartMonitor is never covered by anything. This could muffle the sound of an alarm.

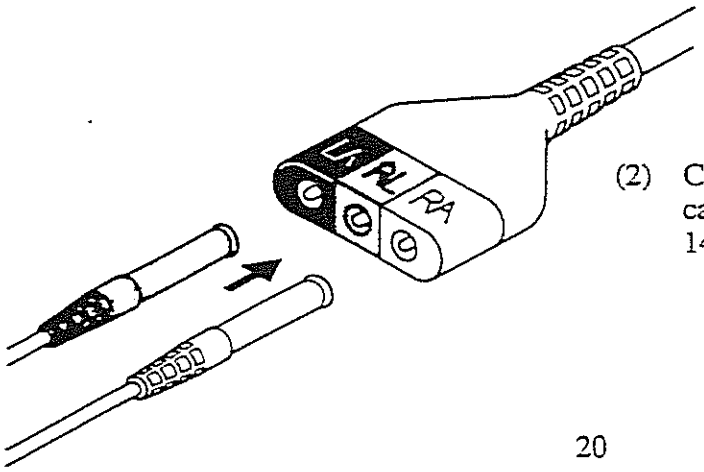
FUNCTIONAL SELF-TEST

The *Functional Self-Test* should be done at least once a week, as well as under the following conditions:

1. When a lead wire is changed.
2. When the patient cable is changed.

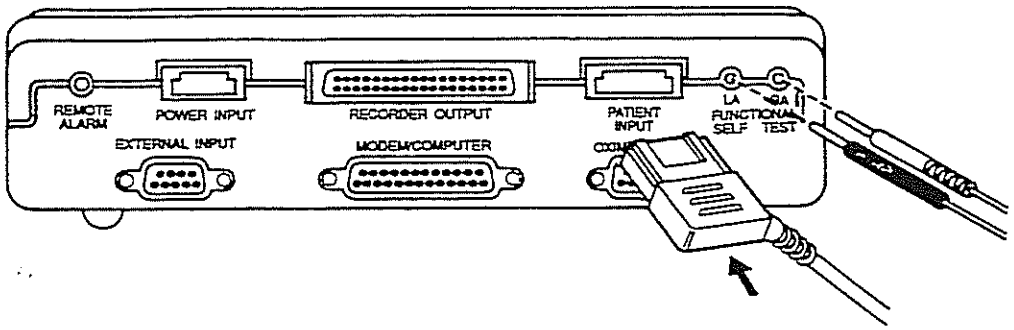


(1) Connect the patient cable to the SmartMonitor as described in Step 1 (page 14) of the operating instructions.



(2) Connect the lead wires to the patient cable as described in Step 2 (page 14) of the operating instructions.

(3) Connect the lead wires to the SmartMonitor back panel FUNCTIONAL SELF-TEST socket. Insert the **WHITE** lead wire into the opening labeled "RA." Insert the **BLACK** lead wire into the opening labeled "LA."



(4) Press the POWER OFF/ON button to turn the SmartMonitor on. The alarm should make a short "beep" and the lights on the front of the SmartMonitor should come on briefly and then go off. After all the alarm lights turn off, the POWER and CHARGER lights should remain on and the green HEART and RESPIRATION lights should be blinking.

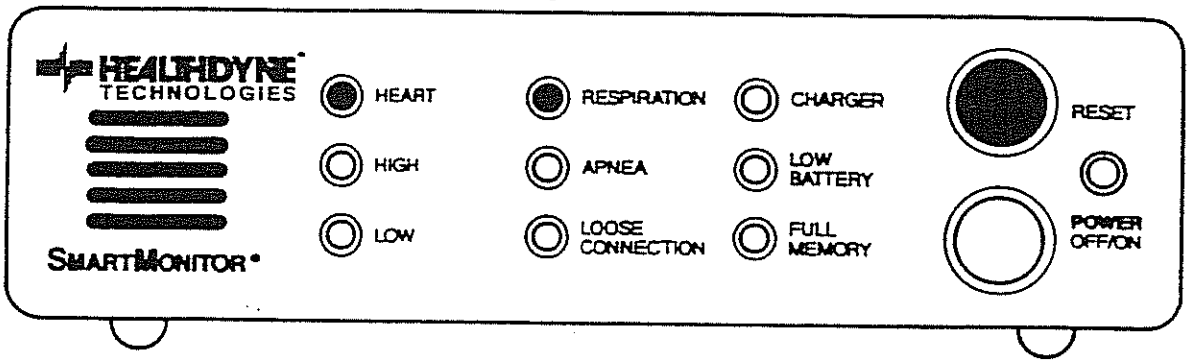
If the following lights remain on or are blinking, and/or the alarm sounds continuously, corrective action should be taken before continuing the Functional Self-Test. Start the test over once the problem has been corrected.

A. **LOW BATTERY** - If the LOW BATTERY light stays on longer than 32 seconds, the batteries are drained. Turn the SmartMonitor off using the correct Power Off procedure described previously. Make sure the Battery Charger is plugged into a live power outlet and properly connected to the SmartMonitor. Allow the SmartMonitor to recharge for 24 hours before performing the Self-Test.

B. **FULL MEMORY** (900SL, 970S, and 970SE only) - The SmartMonitor's memory is 80% to 100% full. The memory needs to be transferred and cleared. Contact your dealer.

C. **LOOSE CONNECTION** - Indicates loose or bad electrodes, lead wires, patient cable, or Body Position Sensor. Check all connections and/or replace lead wires first, then the patient cable if necessary.

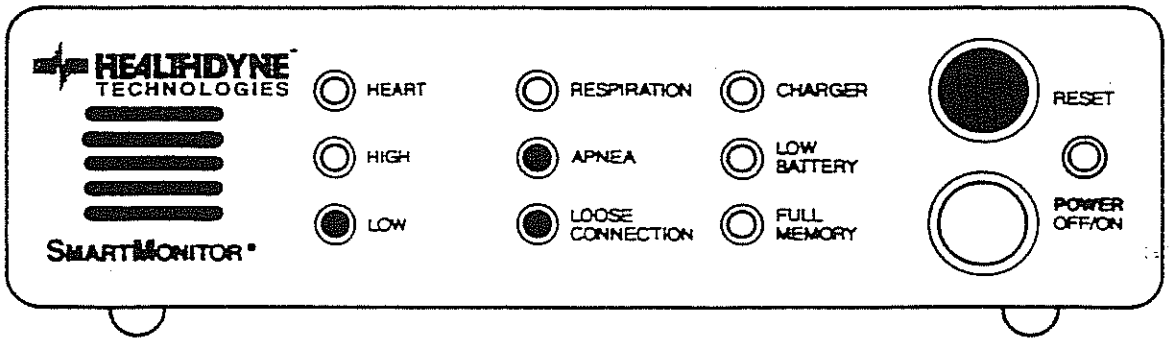
(5) The green HEART and RESPIRATION lights should continue to blink for about 30 seconds.



(6) The green lights should stop blinking. The red LOW light should come on within about seven seconds after the HEART light stops flashing, and the audible alarm should beep once every second.

(7) The next light to come on should be the red APNEA light. (There should be no green HEART or RESPIRATION light flashes during this time.) Both the LOW heart and APNEA lights will be on.

(8) Remove one lead wire from the FUNCTIONAL SELF-TEST socket. To remove lead wires, grasp and pull the *strain relief area* located near the connecting tip. **Do not grasp the wire.** The LOOSE CONNECTION light will stay on, and the sound will change from beeping to continuous. This lets you know that the SmartMonitor, patient cable, and lead wires are working as they should.



(9) Turn the SmartMonitor off using the correct Power-Off procedure:

- Press and hold the blue RESET button.
- Press and release the white POWER OFF/ON button.
- Wait two seconds, then release the RESET button.

If the SmartMonitor is not powered off correctly, the alarm will sound continuously. This is the "sibling" alarm. To correct a "sibling" alarm, press the POWER OFF/ON button to ON. Press and hold the RESET button, then press and release the POWER OFF/ON button. Wait two seconds, then release the RESET button. Repeat the proper Power-Off procedure as described above (Step 9).

****CAUTION****

The SmartMonitor's lights and alarms should behave as described in the Self-Test. If they don't, contact your dealer. The Functional Self-Test is the easiest way to check the lead wires and the patient cable. Do not use your monitor if the alarm sounds weak or does not activate upon initial power-on. Also, you can determine the loudness and response of the alarm during the Functional Self-Test. If the alarm sounds weak or fails to activate, immediately contact your dealer for assistance.

VI. RESPONDING TO ALARMS - Parental Instructions

If an alarm sounds, you should:

I. **Check your child's skin color immediately.**

If your child looks pale, dusky, or blue, start physical stimulation immediately. Respond as instructed by your doctor or in your CPR class.

II. **If your child's skin color is normal, check to see if he/she is breathing.**

If your child is not breathing, respond as instructed by your doctor or in your CPR class. An example of your response could be as follows:

(1) Gently pat the baby. The baby may correct the cause of the alarm on his/her own.
(2) If the baby does not correct the cause of the alarm, start physical stimulation immediately.
(3) If the baby does correct the alarm, note it on your log sheet.
(4) Press the RESET button to reset any alarm lights.

If your child is breathing, respond as instructed by your doctor or in your CPR class. An example of your response could be as follows:

(1) Wait for a few seconds. Watch to see if the baby's breathing and color remain normal.
(2) Check the SmartMonitor to see which light is on. Note it on your log sheet.
(3) If the alarm sound is continuous, look at the following:

A. **The LOOSE CONNECTION light**
If this red light is on, check the connections between the electrodes, lead wires, patient cable, and the monitor. If something has come loose, reconnect it and press the RESET button. The alarm should stop. If the alarm does not stop, turn off the SmartMonitor. Then, check the following items:

The electrodes – They should be clean and there should not be any cracks on the surface.
The baby's skin – Make sure that where the electrodes are placed is clean and free from oil, lotions, or perspiration.
The electrode belt – Make sure it is snug and keeping the electrodes in the proper place.
The body position sensor – Make sure it is plugged into the cable, and the cable is plugged into the SmartMonitor.

B. **The LOW BATTERY light**

If this red light is flashing every 30 seconds, plug in the Battery Charger immediately. The yellow CHARGING light will come on. The LOW BATTERY light will stop flashing when the Battery Charger has been plugged in long enough to partially recharge the batteries. Fully drained batteries need about 24 hours to recharge.

C. **No lights at all are on**

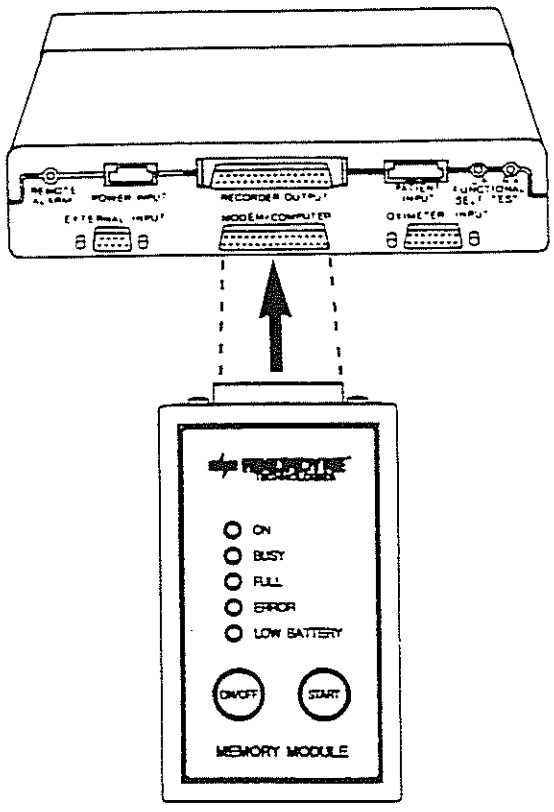
The SmartMonitor was turned off without pushing the RESET button first. Press the POWER OFF/ON button to turn the monitor back on. Power-off correctly.

VII. USING THE MODEL 980/982 MEMORY MODULE

The Model 980/982 Memory Module is a pocket-sized electronic memory transfer product. It is designed to transfer (to itself) SmartMonitor memory contents via the SmartMonitor MODEM/COMPUTER connector. This should be done when your SmartMonitor has a Full Memory alarm, or as directed by your dealer or doctor. Upon completion of a successful transfer (download), the Memory Module automatically erases the SmartMonitor memory. After downloading a SmartMonitor, your dealer can connect the Memory Module to a computer just as a SmartMonitor would be downloaded.

Step 1. Make sure the Memory Module and the SmartMonitor power is OFF.

Step 2. Connect the Memory Module directly to the MODEM/COMPUTER connector of the SmartMonitor (rear panel). Do not use a cable between the Memory Module and the SmartMonitor.



Step 3. Set up the SmartMonitor in the Communications Mode.

- Press and hold the blue RESET button.
- Press and release the POWER OFF/ON button.
- Wait until the Monitor alarms, release the RESET button, and then momentarily press and release the RESET button again.

If the FULL MEMORY light is on, press the RESET button to silence the alarm.

The SmartMonitor beeps every 10 seconds whenever the SmartMonitor is in the Communications Mode, but not electronically "connected" or linked to the Memory Module. This is a reminder that the SmartMonitor is powered on for working with the Memory module, but not to monitor the infant.

****WARNING****

Do not connect your infant to the SmartMonitor if you prepared the SmartMonitor to work with the Memory Module in the Communications Mode (Step 3). The Apnea and Heart rate alarms do not work when the SmartMonitor is set up (in the Communications Mode) for use with the Memory Module.

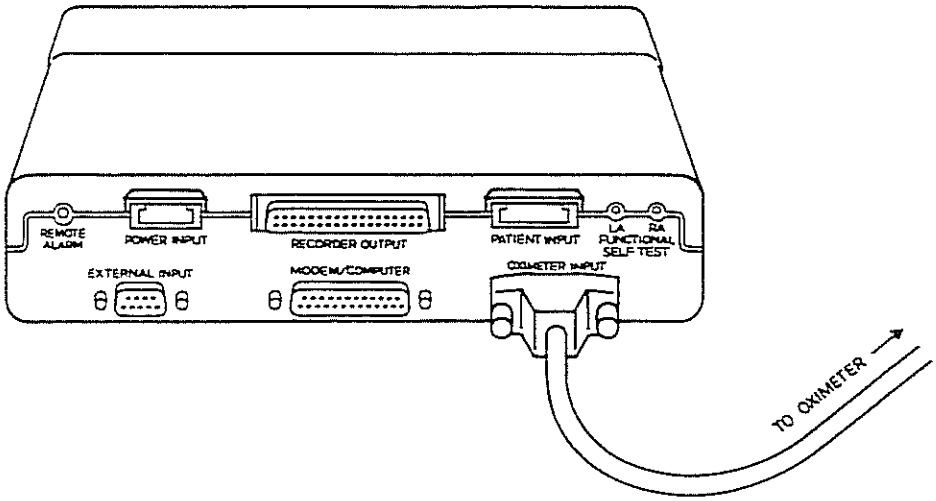
If necessary, refer to the Model 980 Memory Module Parental Instructions for Use for further details on using the Memory Module with the SmartMonitor. If you have not been provided with these instructions, contact your dealer.

VIII. USING AN OXIMETER

Your doctor may want to record blood oxygen and pulse information about your infant. This can be done by connecting an *Oximeter* to the SmartMonitor. Follow the directions listed below:

Step 1. Place the *Oximeter* on a flat surface and place the SmartMonitor close to the *Oximeter*.

Step 2. Connect a cable from the output of the Oximeter to the OXIMETER INPUT connector (SmartMonitor back panel). If you are using a Healthdyne Model 930 Oximeter, use a 9130N or 9130 Cable. If you are using another company's Oximeter, your dealer will provide a cable.



NOTE: Refer to the Oximeter Home Operator's Manual for instructions on Oximeter setup and use.

****CAUTION****

Always remember to connect the cable from the Oximeter to the SmartMonitor before using the Oximeter. If you forget to connect the cable, your doctor will not know about your infant's blood oxygen.

IX. USING THE PHONE MODEM

Using the Hayes Model 2400V/9600VO/9600V Modem

HOME SETUP

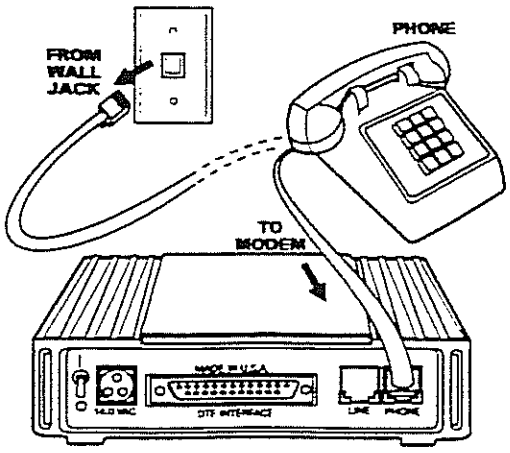
Your dealer may have provided a Hayes Model 2400V or 9600VO/9600V *Modem* for use with the SmartMonitor. The Modem allows the dealer or hospital to communicate with the SmartMonitor through the telephone lines.

Using a Series 9500 Computer, the dealer or hospital can communicate with the SmartMonitor in the following ways:

- Check the alarm and recording limits to make sure each one is set properly.
- If necessary, change the alarm or recording limits.
- Review the Patient and Equipment Events Logs to determine what types of alarms have occurred.
- Download patient waveforms from your SmartMonitor to find what caused the alarms to occur.

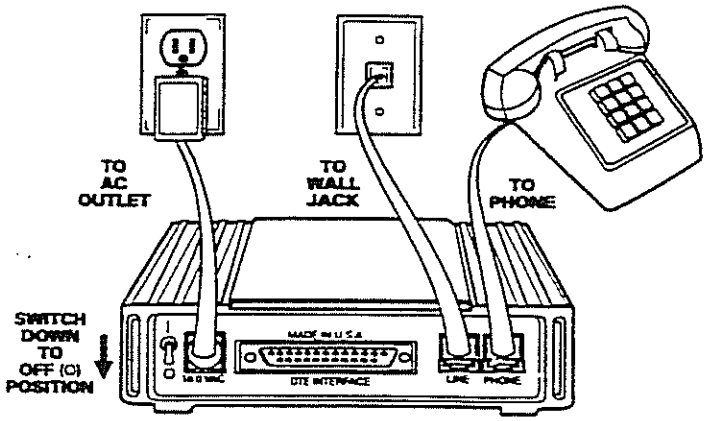
The dealer or hospital must contact the parent when it is time to work with the SmartMonitor through the Modem. It is easy to prepare the SmartMonitor, Modems, computer and telephones to work together. Follow the steps below and on the following pages, and make sure that each one is completed.

Step 1. Unplug the telephone from the wall. Plug the telephone wire into the PHONE connector on the back of the Modem.



Step 2. Connect the Modem Power Supply to the wall outlet and to the Modem connector marked 14.0 VAC (or 9.0 V~AC).

Step 3. Set the power switch on the rear of the Modem downward to "0." This will turn it off.



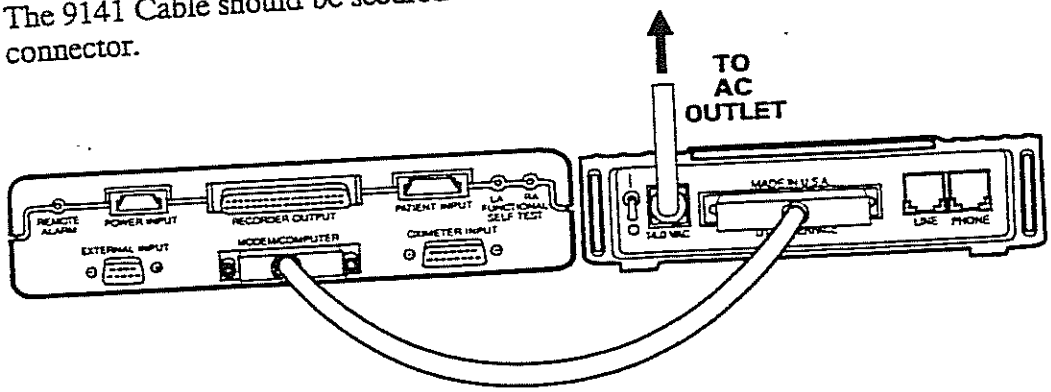
Step 4. Connect a Model 9155 or 9160 Cable between the LINE connector of the Modem and the wall jack. The cable ends are the same -- either end can be plugged into the Modem or wall jack.

Step 5. Pick up the telephone and listen for a dial tone. If you do not hear a dial tone, check all cables to make sure each one is plugged in completely. Also, make sure the Modem power switch is set downward to off.

If you still do not hear a dial tone, disconnect the Modem from the wall jack. Then connect the telephone to the wall jack. Call your dealer for assistance.

Step 6. When you hear a dial tone, hang up the telephone. You can use the telephone to call out. You can receive calls as usual as long as the Modem power switch is in the downward (off) position.

Step 7. Connect the SmartMonitor to the Modem using a Model 9141 Cable. Either end of the cable may be plugged into the Modem connector marked DTE INTERFACE. The 9141 Cable should be secured to the Modem using the screws on the cable connector.



MODEL 9141 CABLE

Step 8. To allow the SmartMonitor to work with the Modem, activate the Communications Mode of the SmartMonitor:

- Press and hold the RESET button.
- Push the POWER OFF/ON button to ON.
- Wait until the monitor alarms. Release the RESET button and briefly press and release RESET button.

If the FULL MEMORY light is on, press the RESET button again to silence the alarm.

The SmartMonitor beeps every 10 seconds whenever the SmartMonitor is in the Communications Mode, but not "connected" or linked to the computer. This is a reminder that the SmartMonitor is powered on for working with the Modem, but not to monitor the infant.

****WARNING****

Do not connect the infant to the SmartMonitor if you prepared the SmartMonitor to work with the Modem in the Communications Mode (Step 9). The Apnea and Heart rate alarms do not work when the SmartMonitor is set up (in the Communications Mode) for use with the Modem.

Step 9. The dealer should instruct you to switch the Modem power on to the "1" (upward) position. The lights on the front of the Modem will turn on. It is not important to determine which lights are on or off.

Step 10. After about one minute the dealer will call the home phone number using a modem in a computer. Your phone may ring, but do not answer. Usually, the Modem will answer the call before the phone rings. The Modem answers the call and connects the SmartMonitor to the computer through the phone line. When the communications link has been set up, the OH and CD lights on the front of the Modem will turn on.

Step 11. The amount of time required to work with the SmartMonitor will not always be the same. It could be as short as a few minutes, or as long as 25 minutes. When information is retrieved from the SmartMonitor (and the computer operator has finished working with the SmartMonitor), it will beep five times.

In a few seconds, the OH and CD lights on the Modem will turn off. This signals that the communications link is no longer set up. **You should then switch the Modem power off to the "0" (downward) position.** You may now use your telephone.

TIPS FOR USING THE HAYES 2400V/9600VO/9600V MODEM

Emergency Phone Calls

If you need to make an emergency phone call during the time the Modem switch is in the "1" (ON) position, follow the steps below:

(1) Switch the Modem power to the "0" (OFF) position.
(2) Pick up the telephone and listen for a dial tone.
(3) Dial out normally.

If there is no dial tone, hang up, wait five seconds, and then try again.

Connections

Once the Modem and telephone are set up, the connections may be left set up for convenience. The telephone will work normally as long as the Modem power switch is in the "0" (OFF) position.

The telephone may also be moved to another phone jack if desired. The telephone does not have to be connected to the Modem during SmartMonitor communications.

Incoming Phone Calls

The Modem answers incoming calls only when the power switch is in the "1" (ON) position. If you do not change the power switch back to the "0" (OFF) position, incoming voice calls cannot be received.

Call Waiting/Call Forwarding

Call waiting and call forwarding interrupt Modem communications. Healthdyne strongly recommends suspension of call waiting and call forwarding services as long as Modem Communications are planned.

Multiple Phones

If a phone in a different room is picked up during Modem communications, electronic sounds can be heard. This can interfere with communications and may cause the communications to break off.

Party Lines

Use of a Modem in a home with a party line is not recommended due to the chance of communications interference.

Using the Practical Peripherals Model 2400V Modem

HOME SETUP

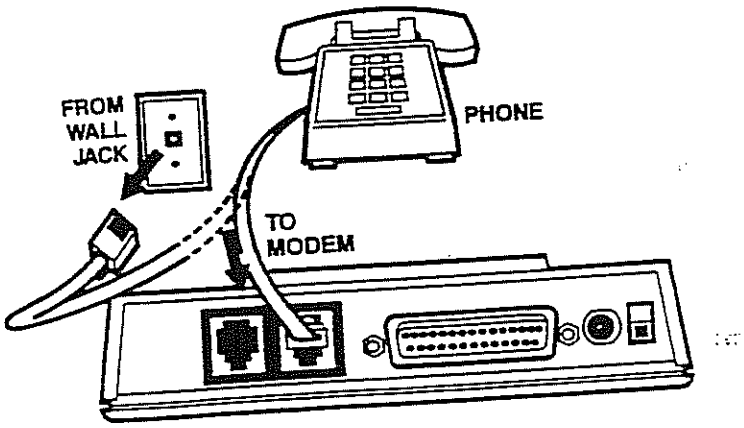
Your dealer may have provided a Model 2400V Modem to use with the SmartMonitor. The Modem allows the dealer or hospital to communicate with the SmartMonitor through the telephone lines.

Using a Series 9500 Computer, the dealer or hospital can communicate with the SmartMonitor in the following ways:

- Check the alarm and recording limits to make sure each one is set properly.
- If necessary, change the alarm or recording limits.
- Review the Patient and Equipment Event Logs to determine what types of alarms have occurred.
- Download patient waveforms from your SmartMonitor to find what caused the alarms to occur.

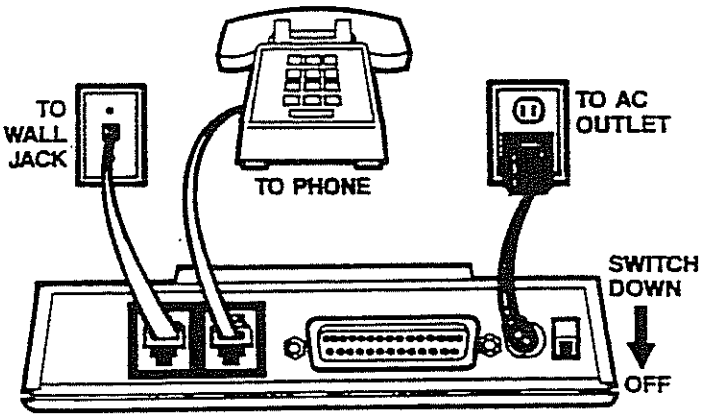
The dealer or hospital must contact you when it is time to work with the SmartMonitor through the Modem. It is easy to prepare the SmartMonitor, Modems, computer and telephones to work together. Follow the steps below and make sure that each one is completed.

Step 1. Unplug the telephone from the wall. Plug the telephone wire into one of the two phone connectors (the two identical openings placed side-by-side) on the back of the Modem.



Step 2. Connect a Model 9155 or 9160 Cable between the phone connector of the Modem and the wall jack. The cable ends are the same, either end can be plugged into the Modem or wall jack.

Step 3. Connect the Modem Power Supply to the wall outlet and the Modem.



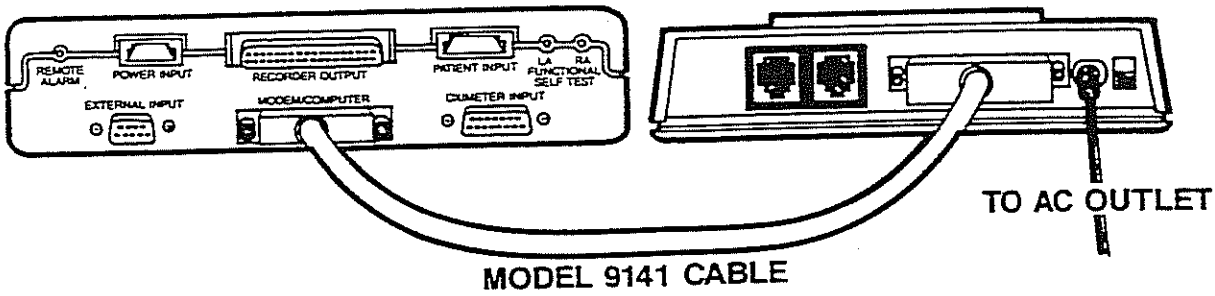
Step 4. Slide the switch on the rear of the Modem downward to off.

Step 5. Pick up the telephone and listen for a dial tone. If you do not hear a dial tone, check all cables to make sure each one is plugged in completely. Also, make sure the Modem power switch is downward to off.

If you still do not hear a dial tone, disconnect the Modem from the wall jack. Then connect the telephone to the wall jack. Call your dealer for assistance.

Step 6. When you hear a dial tone, hang up your telephone. You can use your telephone to call out. You can receive calls as usual as long as the Modem power switch is in the downward (off) position.

Step 7. Connect the SmartMonitor to the Modem using a Model 9141 Cable. Either end of the cable may be plugged into the Modem. The 9141 Cable should be secured to the Modem using the screws on the cable connector.



Step 8. If your baby must continue to be monitored during modem use, skip to Step 10.

Step 9. To allow the SmartMonitor to work with the modem, activate the Communications Mode of the SmartMonitor.

- Press and hold the RESET button.
- Push the POWER OFF/ON button to ON.
- Wait unit the monitor alarms. Release the RESET button, then briefly press and release the RESET button. The alarm will stop.

If the FULL MEMORY light is on, press the RESET button again to silence the alarm.

The SmartMonitor beeps every 10 seconds whenever the SmartMonitor is in the Communications Mode, but not "connected" or linked to the computer. This is a reminder that the SmartMonitor is powered on for working with the Modem, but not to monitor the infant.

****WARNING****

Do not connect the infant to the SmartMonitor if you prepared the SmartMonitor to work with the Modem in the Communications Mode (Step 9). The Apnea and Heart Rate alarms do not work when the SmartMonitor is set up (in the Communications Mode) for use with the Modem.

Step 10. Your dealer will tell you when to switch the Modem power to the ON (upward) position. The lights on the front of the Modem will turn on. It is not important to determine which lights are on or off.

Step 11. After about one minute the dealer will call the home phone number using a modem in a computer. Your phone may ring, but do not answer. Usually, the Modem will answer the call before the phone rings. The Modem answers the call and connects the SmartMonitor to the computer through the phone line. **The OH and CD lights on the front of the Modem will turn on showing that a communications link has been established.**

Step 12. The amount of time required to work with the SmartMonitor will not always be the same. It could be as short as a few minutes, or as long as 30 minutes. When information is retrieved from the SmartMonitor (and the computer operator has finished working with the SmartMonitor), it will beep five times.

In a few seconds, the OH and CD lights on the Modem will turn off. This signals that the communications link is no longer set up. **Switch the Modem power back to the OFF (downward) position.** You may now use your telephone.

TIPS FOR USING THE PRACTICAL PERIPHERALS MODEL 2400V MODEM

Emergency Phone Calls

If you need to make an emergency phone call during the time the Modem power switch is in the ON position, follow the steps below:

(1) Switch the Modem power to the OFF position.
(2) Pick up the telephone and listen for a dial tone.
(3) Dial out normally.

If there is no dial tone, hang up, wait five seconds, and then try again.

Connections

Once the Modem and telephone are set up, the connections may be left set up for convenience. The telephone will work normally as long as the Modem power switch is in the OFF position.

The telephone may also be moved to another phone jack if desired. The telephone does not have to be connected to the Modem during SmartMonitor communications.

Incoming Phone Calls

The Modem answers incoming calls only when the power switch is in the ON position. If you do not change the power switch back to the OFF position, incoming voice calls cannot be received.

Call Waiting/Call Forwarding

Call waiting and call forwarding interrupt Modem communications. Healthdyne strongly recommends suspension of call waiting and call forwarding services as long as Modem Communications are planned.

Multiple Phones

If a phone in a different room is picked up during Modem communications, electronic sounds can be heard. This can interfere with communications and may cause communications to break off.

Party Lines

Use of a Modem in a home with a party line is not recommended due to the chance of communications interference.

X. CARE OF THE MONITOR AND ACCESSORIES

The Monitor:
Use a clean cloth with an unscented, alcohol-free dishwashing detergent or 3% Hydrogen Peroxide solution (the kind found in most stores) to clean the outside of the monitor. Never clean the monitor while the monitor is in use or the Battery Charger is plugged into an electrical outlet. **Never immerse the monitor in water.** Do not clean the monitor with (rubbing) alcohol.

The Electrodes:
The electrodes can be cleaned with a mild soap and water. They must be rinsed well to remove any traces of soap film. Soap film can prevent heart and breathing signals from being picked up clearly from the monitor. **Disconnect the electrodes before cleaning.** Do not clean the electrodes with (rubbing) alcohol.

The Electrode Belt:
The belt should be washed by hand and rinsed thoroughly. The belt should never be placed in the washer or dryer. This may cause the belt to shrink. Do not clean the electrode belt with (rubbing) alcohol.

The Safety Lead Wires:
Hand the lead wires carefully. **Never immerse them in water.** Do not clean the lead wires with (rubbing) alcohol.

The Battery Charger:
Never immerse the Battery Charger in water. Always use a properly grounded three-pronged outlet. Always use an outlet not connected to a wall switch. Do not clean the battery charger with (rubbing) alcohol.

The Remote Alarm:
The Remote Alarm can be cleaned in the same way as the Monitor. **Never immerse the Remote Alarm in water.** Do not clean the remote alarm with (rubbing) alcohol.

The Soft Carrying Case:
Although the care label in the carrying case suggests machine washing in warm water, the appearance of the carrying case will change noticeably after washing. Healthdyne recommends that you wipe the case with a damp cloth or sponge using a light detergent, if necessary. Air dry only.

XI. WARNINGS AND CAUTIONS

- **Federal law restricts this device to sale by; or on the order of, a licensed doctor. This instrument should be used only under the supervision of a doctor.**

The SmartMonitor - General Precautions

- The SmartMonitor is a monitor. It will not prevent or restore the interruption or loss of breathing and/or heart activity.

- Some apneas will be missed by apnea monitors. The monitors may mistake body movement for breathing, or if your baby has apnea due to choking (obstructions), the monitor could mistake movement caused by choking for breathing. The monitor will detect most apneas not caused by choking.

- Be aware that apnea monitors are not perfect. Most apnea monitors will miss some apneas (no breathing). For example, they may mistake body movement for breathing. Also, if your baby has apnea due to choking, the monitor could mistake the movement caused by choking for breathing.

- Use your Monitor. Be certain to monitor your baby as prescribed. Although it is not perfect, the Monitor will detect most apneas not caused by choking. It will also warn you if your baby's heart rate becomes abnormal. But the Monitor can only do its job if it is turned on and properly connected to your baby. Do not stop using the Monitor until your doctor says its okay.

- Do not X-ray the SmartMonitor equipment (i.e. airport security checks). This may damage the electronic components inside the monitor.

- Do not sterilize the SmartMonitor or place liquids on or near the SmartMonitor.

- Report problems with the Monitor. If the Monitor isn't working properly, contact your dealer or doctor immediately for service and watch the baby closely while the Monitor is not working properly.

- Follow the manufacturer's recommendations. Be sure to read, understand and follow the instructions in the manual that comes with the apnea monitor. If you don't have a manual, contact your dealer.

The Monitoring Environment

- Be aware of signal interference which can occur from external sources. Electronic signals are required for the SmartMonitor to function. Sources of external interference could cause the monitor to miss apnea and heart rate alarms. Even though the monitor contains methods and techniques which can provide protection from external sources of interference, you should operate the monitor as follows:

    - Keep monitors at least three feet away from all electrical appliances. Some examples of this include TV sets, electric blankets, air conditioners, microwave ovens, cordless telephones, and cellular phones.

    - Synthetic fabric from draperies or rugs can also cause interference due to static electricity. Touching an inanimate object (wall, crib, etc.) before handling the patient or the SmartMonitor often prevents static build-up problems.

    - Strong transmitter signals from TV, radio, airport, police, fire and ambulance stations could be picked up as heart and/or breath signals. If located less than one mile from one or more of these sources, ask your dealer to assist you in determining whether your monitor will operate properly.

    - Check the monitor's "RESPIRATION" light. Listen while your baby breathes and watch the "RESPIRATION" detection light on the monitor . While your baby is breathing quietly, the light should flash once and only once for each breath the baby takes, although it may flash additional times when the baby is moving. If your baby is breathing quietly and the "RESPIRATION" light flashes more or fewer times than your baby breathes, contact your dealer immediately. This can help determine if the monitor is affected by this type of interference.

- In some locations the monitor will not work properly. If the monitor is affected by external interference in the area, you may not be able to use the monitor. Contact your dealer for further assistance. Use of a third (RL) electrode may help reduce electrical interference.

- Keep children and pets away from the monitor. Children and pets could accidentally disconnect the monitor or cause other accidents. Be cautious -- especially when you are out of the room with your baby.

The Monitoring Environment (continued)

- Place the monitor on a sturdy and level surface. Do not place the monitor on the carpet or in the crib.

- If monitoring two or more infants in the same area, keep the monitors, patient cables and lead wires at least three feet apart. Having the patient cables and lead wires close together may cause missed apneas due to interference.

- Do not connect the infant to the SmartMonitor if the monitor was prepared to work with the Modem (placed in the Communications Mode). The Apnea and Heart alarms do not work when the SmartMonitor is set up with the Modem in this way.

- Do not send information via modem during electrical storms. Information could be lost or equipment could be damaged.

- Do not use the SmartMonitor at the same time as other "impedance" monitors. This may cause missed apneas due to interference.

- The SmartMonitor is not intended for use with cardiac or diaphragmatic pacemaker patients.

- When using the monitor near patients on oxygen, keep the monitor outside the oxygen tent, and at least three feet away from the oxygen tank (source) or other flammable gases.

- Do not rock or sleep with your monitored baby. Touching or moving near your baby, monitor, or cables could cause the monitor to miss apneas.

- Do not use a 60 Hz (hertz) Monitor/charger in a location with 50 Hz power. Do not use a 50 Hz Monitor/charger in a location with 60 Hz power. Look at the power rating on the serial number label to determine whether the Monitor is 50 Hz or 60 Hz. Most U.S. and and Canadian power systems are 60 Hz.

Alarms

- Respond immediately to all SmartMonitor alarms according to your doctor's instructions.
- Be understanding of false alarms. False alarms cannot be completely avoided. Some of them are actual apneas where the monitor alarm has stimulated the baby to breathe again. Many false alarms may be caused by movement, loose lead wires or improperly located electrodes. If you are having an excessive number of alarms contact your dealer or doctor for further assistance.
- Be sure that the alarm is working. Be sure that the alarm works during the monitor self-test. Check the alarm sound before each use. If the alarm sound does not work, call your dealer immediately. Watch your baby closely until the problem is solved.
- Be sure that you can hear the alarm. Make sure you can hear the alarm sound from other rooms or while there is noise in the house. Have someone test the monitor alarm while you are in those rooms or noisy environments. If the alarm sound is not loud enough to be heard in the rooms where you need to hear it, ask your dealer for a Remote Alarm.
- Do not use your Monitor if the audible alarm sounds weak or does not activate upon initial Power-On or during the performance of the Functional Self-Test feature. Contact your dealer immediately for assistance.

Accessories

- Always keep the SmartMonitor and accessories out of the reach of children.
- Do not use non-safety style lead wire and patient cables with this monitor. Using non-safety style lead wire and patient cables may pose a risk of severe electrical shock or death. Refer to the instructions in this manual to make sure the lead wires and cables are connected properly. Use only Healthdyne safety lead wires and patient cables with Healthdyne apnea monitors.
- Remove the electrode belt and the lead wires when your baby is not being monitored.
- Handle the lead wires carefully to prevent them from breaking inside the insulation. Always grasp the lead wire at the strain relief area to remove them from the electrodes or patient cable.

Accessories (continued)

- Do not plug electrode lead wires into electrical outlets. Lead wire contact with electrical outlets presents a serious shock hazard, and may cause injury or death.

- Do not allow the patient cable, lead wires or Battery Charger cable to become tangled, coiled, crossed, or wrapped around the baby's neck, arms, or legs. This may cause strangulation.

- Never use an extension cord with the Battery Charger. Always operate the Battery Charger using a properly grounded AC power outlet. Connecting the green wire on a three-prong to two-prong plug adapter to the receptacle cover screw does not usually provide a "grounded" connection. If you are unsure whether a power outlet(s) is properly grounded, contact your dealer for assistance.

- Check the Battery Charger connection. **Gently** wiggle and twist the connector to be sure it is tight. The CHARGER light should not flicker when the connector is gently wiggled or twisted.

- Do not clean the SmartMonitor while the Battery Charger is attached and connected to an electrical source. Do not immerse the SmartMonitor, Battery Charger, patient cable, or lead wires in water. Never use the monitor on your baby while your baby is being bathed. This could result in electrical shock and/or damage to the equipment.

- Disconnect the Battery Charger during lightning storms to reduce risk to your baby.

XII. TROUBLESHOOTING GUIDE

Whenever a technical problem occurs which you cannot handle, contact the dealer. Do not try to fix the SmartMonitor.

PROBLEM	POSSIBLE CAUSE	INSTRUCTIONS
Monitor will not operate.	Monitor disconnected from Battery Charger, batteries drained.	Plug Battery Charger into monitor and outlet.
	No power at outlet.	Locate an outlet with power.
	Defective Battery Charger.	Contact your dealer.
	Internal part failure.	Contact your dealer.
Alarm Sound continuous.	Incorrect Power-Off sequence.	First, turn the monitor power back ON. Next, press and hold the RESET button. Press and release POWER OFF/ON. Wait two seconds, then release the RESET button.
	No power, batteries drained.	Connect Battery Charger. Use Power-Off procedure to silence alarm. Prior to use, allow batteries to charge 24 hours.
	Internal part failure.	Contact your dealer.
Alarm sounds weak.	Internal part failure.	Contact your dealer.

TROUBLESHOOTING GUIDE

PROBLEM	POSSIBLE CAUSE	INSTRUCTIONS
LOOSE CONNECTION light remains on.	Connections between electrodes, lead wires, and patient cable are not properly made.	Verify that (a) patient's skin underneath electrodes is clean, (b) electrodes are clean, and (c) lead wires are fully inserted into the electrodes and patient cable.
	Defective lead wires.	Replace lead wires and perform Functional Self-Test.
	Defective patient cable.	Replace patient cable and perform Functional Self-Test.
	Defective electrodes.	Replace electrodes.
	Internal part failure.	Contact your dealer.
LOOSE CONNECTION light blinks.	Connections between Body Position Sensor, connecting cable, and External Input connector not properly made.	Verify that (a) Body Position Sensor is plugged into the connecting cable, and (b) connecting cable is securely plugged into External Input connector.
	SmartMonitor programmed for Body Position Sensor, but no sensor is being used.	Contact your dealer.
	Defective Body Position Sensor.	Replace Body Position Sensor.
	Defective connecting cable.	Replace connecting cable.
	Internal part failure.	Contact your dealer.

TROUBLESHOOTING GUIDE

PROBLEM	POSSIBLE CAUSE	INSTRUCTIONS
While monitoring, constant audible alarm (without alarm lights). Pressing RESET will not silence audible alarm.	Internal error condition detected by SmartMonitor.	Reduce likelihood of electro-static discharge around Smart-Monitor. Contact your dealer.
Upon Power-On, constant audible alarm (without alarm lights). Pressing RESET will not silence	POWER button was not fully pressed, causing momentary power contact with subsequent "Power Off" (sibling) alarm.	Correct "Power-Off" alarm. Always fully press POWER button when powering SmartMonitor on.

XIII. Glossary

Apnea: A pause in breathing. When the pause lasts longer than 15 seconds, it is usually considered abnormal.

Automatic Power Shutdown: A self-regulating event by the SmartMonitor which causes the monitor to stop operations.

Cardiopulmonary Resuscitation (CPR): A procedure designed to restore normal breathing that includes the clearance of air passages to the lungs and heart massage by putting pressure on the chest.

Electrode: A conductor used to establish electrical contact between the monitor and the patient's skin.

Functional Self-Test: A user-performed test to verify the SmartMonitor, patient cable, and lead wires are working properly.

Internal Memory: Stored information in the SmartMonitor.

"LA": Left side of the body.

Modem: A device that allows the dealer or hospital to work with a monitor through telephone lines.

Obstructive Apnea: A pause in breathing caused by a blockage or obstruction in the airway. Such obstructions may result from a spasm of the larynx, reflux, or other causes.

Oximeter: A device used to record blood-oxygen information.

"RA": Right side of the body.

Respiration: Breathing--the inhaling and exhaling of air.

Strain Relief Area: Located at the connecting tip of the lead wires or cables, this area has added insulation surrounding the wires to prevent breakage when handled. This area is to be grasped when removing lead wires.