

Spot Vital Signs® LXi Outline Train the Trainer






A. Intended Use

1. Depending upon the configuration of your particular device, the Spot Vital Signs® LXi can measure:
 - a. Systolic and diastolic blood pressure (on patients greater than 29 days ONLY)
 - b. Pulse rate
 - c. Temperature (oral, adult axillary, pediatric axillary, rectal, or ear)
 - d. SpO2
 - e. MAP
 - f. The Spot LXi also allows the user to manually enter height, weight, respiration rate, and pain level. The device will calculate the Body Mass Index (BMI) following height and weight entries.

B. Battery

1. The device contains a sealed Lead Acid battery.
2. Initially upon receiving the Spot LXi device, connect the battery inside the device per the label on the battery door.
3. Prior to initial use, charge the battery for 6 hours or until the charging icon on the front panel of the device no longer flashes. If your device includes a Braun Thermoscan PRO 4000 ear thermometer, charge an additional hour. If there is an external printer attached, you must charge the Spot LXi an additional 4 hours.
4. The Spot LXi should be charging when not in use.


C. Front Panel Buttons/Controls

Button	Function	Description
	Power	Turns device On or Off
	Blood Pressure Start/Stop	Initiates or cancels a blood pressure cycle
	Memory Button	Recalls up to 50 most recent readings
	Select Button	Accepts the current option
	Navigation Buttons	Move throughout the options in the Navigation Window or to increase/ decrease parameter units





D. Spot LXi Side and Rear Panels Related to Connections

1. Connect the blood pressure hose, thermometer probe and optional attachments of the appropriate ports depending upon configuration of the device.



E. Turn Spot LXi device ON

1. Press the Power button .
2. The display lights up, a beep sounds, and the device performs an internal self-check.
3. Standby Mode:
 - a. When the device is powered on and left unused for 2 minutes it will go into Standby Mode. This saves battery power and the display will turn blank.
 - b. Press any button to bring the device out of Standby Mode.
4. The device automatically powers off when not used for 30 minutes.

F. Display Window

1. Before using the Spot LXi the first time, you must program an initial configuration screen. Once this is done, you will not see this screen again.
2. Press the Power button .
3. Press the Select button  to access options and accept entries. Use the Navigation buttons  to move through the menu.
4. The word "Exit" appears at the bottom of the list when you have programmed all items. You must program the settings before you can start to use the device.
5. Scroll to Exit and press the Select button  to save the entries.

G. Blood Pressure (to be used on patients greater than 29 days of age ONLY)

1. Before taking a BP measurement, always perform the steps described below:
 - a. Select appropriate cuff. The cuff is the appropriate size when the artery index marker lies somewhere between the range markings on the BP cuff.
 - b. Position the cuff. The cuff should always be positioned on a bare arm (or alternate site as necessary), preferably 1-2 cm above the elbow, with the artery index marker over the brachial artery. It should fit comfortably to allow no more than 1-2 fingers space between the cuff and the arm. During the BP measurement cycle, the patient should have no movement to the extremity and should remain quiet.
2. To initiate blood pressure measurements:
 - a. Press the Blood Pressure Start/Stop button . Spot LXi inflates the cuff to the appropriate level, measuring the BP as the cuff is inflating. The display shows the inflation pressure as the BP determination is in process. A reading will be obtained in about 15 seconds.
 - b. If a reading cannot be obtained during inflation, i.e., due to severe arrhythmias or patient movement, the device will attempt to obtain a reading during deflation. A message will be displayed in the Navigation Window if this occurs.
3. To cancel a reading while in progress, press the Blood Pressure Start/Stop button .

H. Pulse Rate

1. Pulse rate readings are measured from SpO₂. If SpO₂ is not available, pulse rate will be measured from the blood pressure. NOTE: If there is a HR displayed that was derived from SpO₂, it will *not* be over-ridden by a HR from a blood pressure reading. The device defaults to the SPO₂ HR since it senses for a reading over a longer period of time (approx. 8-10 seconds), versus a HR that is obtained in one moment during a blood pressure reading.



2. To remove last HR readings and clear the display screen: press Save after each reading, turn Off the device or, after 30 minutes of not touching any buttons the device will automatically shut down and clear the display screen.

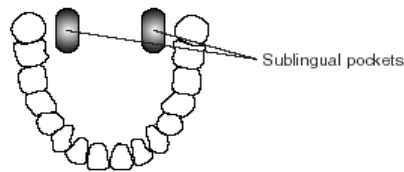
I. MAP

1. MAP display can be turned on or off by entering the Internal Configuration Mode (refer to Section Q). Factory default will be set to off.
2. If MAP is turned on, after a blood pressure measurement, the word "MAP" will appear in the Systolic window and the value will appear in the Diastolic window.

J. Temperature Measurements



SureTemp® Plus Thermometry (if applicable)

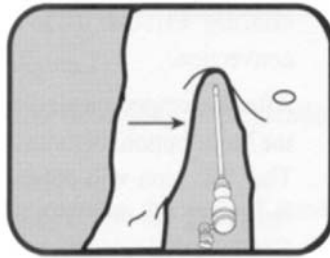
1. Can be used to take an oral temperature in approximately 4-6 seconds, an adult axillary temperature (ages 18 years and older) in approximately 12-15 seconds, a pediatric axillary temperature (ages 17 years and younger) in approximately 10-13 seconds, or a rectal temperature in 10-13 seconds.
2. The temperature can be displayed in degrees Fahrenheit (°F) or Celsius (°C). To determine the current temperature scale, remove the temperature probe from its holder and view °F or °C on the device display. To change scales, refer to the Internal Configuration Mode section.
3. Taking an **Oral Temperature**:
 - a. Ensure that the probe with the **BLUE** ejection button and the **BLUE** probe well are connected to the Spot LXi.
 - b. Hold the probe handle with your thumb and two fingers on the indentations of the probe handle, then withdraw the probe from the probe well.
 - c. Verify the appropriate mode, Oral, is in the display window and the head icon is flashing. To change modes, press the Navigation buttons  until desired setting is displayed; then press the Select button .
 - d. Insert the probe into a new probe cover and press down firmly until a new probe cover engages onto the probe.
 - e. Instruct the patient not to talk or move during the temperature reading process.
 - f. Place the probe into the patient's posterior sublingual pocket.



- g. Have the nurse hold the probe in place maintaining tissue contact until the temperature is complete.
- h. When the final temperature is reached, three beeps sound and the reading is displayed in the Temperature window in the pre-selected scale. Temporarily the reading will appear in both °F and °C in the Navigation Window.
- i. The following may interfere with accurate readings for up to 20 minutes:
 - Ingesting hot or cold liquids
 - Brushing teeth
 - Eating
 - Chewing gum or mints
 - Smoking
 - Performing strenuous activity

4. Taking an **Axillary Temperature:**

- a. Ensure that the probe with the **BLUE** ejection button and the **BLUE** probe well are connected to the Spot LXi.
- b. Hold the probe handle with your thumb and two fingers on the indentations of the probe handle, then withdraw the probe from the probe well.
- c. Ensure the appropriate mode, Adult Axillary (A.AXI) or Pediatric Axillary (P.AXI), appears in the display window and the associated icon is flashing. Adult Axillary will display a flashing shirt; Pediatric Axillary will display a small child crawling. To change the mode, press the Navigation buttons  until desired setting is displayed; then press the Select button .
- d. Insert the probe into a new probe cover and press down firmly until a new probe cover engages onto the probe.
- e. Lift the patient's arm to fully expose the axilla. Place the probe tip as high as possible in the axilla, against bare skin, aligning the probe vertically with the spine. Lower the patient's arm, ensuring axillary tissue completely surrounds the probe tip. The patient should remain still, maintaining good tissue contact throughout the process.



- f. When the final temperature is reached, three beeps sound and the temperature is displayed in the Temperature window in the pre-selected scale. Temporarily the reading will appear in both °F and °C in the Navigation Window.

5. Taking a **Rectal Temperature:**

- a. Ensure that the **RECTAL PROBE** with the **RED** ejection button and the **RED** probe well are connected to the Spot LXi device.
- b. Hold the probe handle with your thumb and two fingers on the indentations of the probe handle, then withdraw the probe from the probe well.
- c. Ensure the appropriate mode, REC, appears in the display window and the lower body icon is flashing.
- d. Insert the probe into a new probe cover and press down firmly until a new probe cover engages onto the probe. The use of lubricant is optional.
- e. Separate the buttocks with one hand. Using the other hand, gently insert the probe inside the rectum **ONLY** 1.5 cm (5/8 of an inch for adults) and **LESS** for infants and children.
- f. Tilt the probe so that the tip of the probe is in contact with tissue. Hold the probe in place throughout the measurement process. When the final temperature is reached, three beeps sound and the temperature is displayed in the Temperature window in the pre-selected scale. Temporarily the reading will appear in both °F and °C in the Navigation Window.

6. Taking a **Monitor Mode Temperature:**

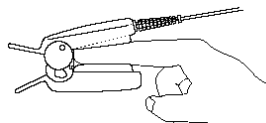
- a. Take the patient's temperature in the appropriate site, Oral, Axillary, or Rectal as outlined above. Leave the probe in place after the device beeps and the temperature is displayed. In approximately 30 seconds, a snail icon will appear on the display, indicating the device is now in Monitor Mode.
- b. Continue to hold the probe in place for 3 minutes for oral or rectal temperatures, 5 minutes for axillary temperatures. The thermometer will not beep to indicate a final temperature.
- c. Once the time limit is achieved, record the temperature before removing the probe from the site. Monitor Mode temperatures **are not** stored in memory.
- d. Return the probe to the probe well to reset the thermometer to Normal Mode.
NOTE: The thermometer enters Monitor Mode automatically if the probe is removed from the well and not used for 60 seconds or if the patient's temperature is too low to allow the device to predict a reading.

K. **Braun ThermoScan® PRO 4000 Ear Thermometry (if applicable)**

1. Pull the thermometer gently toward you and remove it from the housing.
2. Locate the probe cover box inside the thermometer housing. Firmly push the probe tip into the probe cover box. When the probe cover is in place, the thermometer turns on automatically.
3. Listen for the ready signal beep and three dashes to appear on the thermometer.
4. Fit the probe snugly into the ear canal. Correct probe placement is essential for accurate readings. Aim the probe tip in the direction of the tympanic membrane.
5. Press the Start button. If the probe is positioned correctly in the ear canal the "Exac Temp" light flashes. When the thermometer detects an accurate measurement, the "Exac Temp" light is continuously on, a long beep signals the end of the measurement, and the display shows the result.
6. When finished, press the ejector button to eject the used probe cover.
7. Return the thermometer to its holder. Spot LXi displays the patient's temperature and temperature scale in the Temperature window on the device.








L. **SpO₂ (if applicable)**

1. Insert the patient's finger completely into the sensor. The thumb is not recommended for use with the finger clip sensor. **Do not** attach the SpO₂ sensor to the same limb as the blood pressure cuff.






2. The pulse signal bar illuminates, indicating the relative strength and quality of the patient's pulses at the sensor site.
3. Within approximately 10 seconds an initial SpO₂ value will be displayed and is updated every second. The Spot LXi displays the SpO₂ for up to 10 minutes. You **must** remove the sensor to save the reading in Memory.
4. The following may interfere with accurate readings (for a comprehensive list, see the Spot LXi Directions for Use manual):
 - Bright light
 - Fingernail polish
 - Excessive patient movement
 - Poor perfusion
 - Sensor placement on extremities with blood pressure cuff, arterial catheter, or intravascular line

M. Manual Entries

1. Weight, Height, Respiration Rate, and Pain Level can be manually entered in the Spot LXi.
 - a. Press the Navigation buttons  until the arrow is pointing to the chosen parameter in the Navigation Window.
 - b. Press the Select button . The default parameter value appears and flashes above the Navigation buttons.
 - c. Press the Navigation buttons  to increase or decrease the value.
 - d. Press the Select button  to accept the value.
2. Body Mass Index (BMI) is calculated with weight and height entry.
 - a. Once weight and height are entered, use the Navigation buttons  to scroll to Save/Next Reading. Press the Select button  to save the reading.
 - b. Press the Memory button  to view the BMI calculation.

N. Memory Recall

1. Spot LXi retains up to 50 readings in memory. Press the Memory button  to display the previous reading.
2. Press the Navigation buttons  to Scroll, Print, Erase, or Erase All readings.
3. Press the Select button  to choose the desired option. Follow instructions on the display.







O. Error Codes

1. If the Spot LXi detects an error, an error code will display in the parameter that has the error and a message will display in the Navigation Window.

P. Cleaning

1. Never immerse the Spot LXi in any type of fluid. Clean the device with a cloth slightly dampened with one of the following:
 - a. 70% isopropyl alcohol
 - b. 10% chlorine bleach solution
 - c. Mild detergent in water
 - d. PDI Sani-System cloths

Q. Internal Configuration Mode




1. The Internal Configuration Mode allows the user to change operating parameters and adjust power-up default settings. This mode also allows you to see non-changeable device configurations for technical service purposes. To enter the Internal Configuration Mode:
 - a. Turn the Spot LXi off by pressing the Power button .
 - b. Press and hold the Power  and the Select buttons  for 5 seconds. The Internal Configuration Menu appears on the display. The Configuration Menu options are: Version Numbers, Battery, Location Identifier, Date/Time, Blood Pressure, Temperature, Manual Parameters, External Devices, Save Readings, Buttons Lockout, Defaults, and Event Log.
 - c. Use the Navigation buttons  to move through the menu options.
 - d. Press the Select button  to access options or to accept a change.
 - e. Press Power button  to exit the Internal Configuration Mode.

R. External Devices (Optional)








The following external devices – Printer, Weight Scale, Barcode Scanner, and Wireless Radio – must be enabled in the Internal Configuration Mode before using and then attached to the back of Spot LXi.

1. Printer

a. To print the most recent reading:

- Press the Memory button  to recall the last reading.
- Use the Navigation buttons  to scroll to "Print" and then press the Select button .

b. To print a previous reading:

- Press the Memory button  and the most recent reading is displayed.
- Use the Navigation buttons  to move to "Scroll." Press the Select button .
- Use the Navigation buttons  to scroll to the appropriate reading; then press the Select button .
- Use the Navigation buttons  to scroll to "Print." Press the Select button .



2. Weight Scale

- a. When the weight scale is enabled in the Internal Configuration Mode, you cannot manually enter a patient's weight.
- b. Follow the weight scale's instructions to zero out the weight scale.
- c. Instruct the patient to step on the scale and remain still until the weight levels off. The weight will be displayed on the Spot LXi.

3. Barcode Scanner

- a. Supports linear or 2 D barcodes.
- b. When enabled in the Internal Configuration Mode, allows the scanning of patients' and/or clinicians' barcodes for identification purposes.

4. Wireless Radio

- a. Verify the Information System is enabled in the Internal Configuration Mode.
- b. Obtain patient vital signs. "Send/Next Reading" appears in the Navigation Window. Verify patient's barcode appears on the display.
- c. Use the Navigation buttons  to go to "Send/Next Reading." Press the Select .
- d. Spot LXi displays "Sending reading to information system" and successful icon upon completion.
- e. If reading was not sent, it is retained in memory and a failed send operation icon is displayed. Spot LXi will attempt to re-send with the next reading.