SPA MONITOR™

Installation and Operation Instructions



Balboa Instruments Incorporated



The Balboa SpaMonitor is compatible with Balboa EL Series Controls version 2.1 release 11 and later.

For further information, visit our website at www.balboa-instruments.com.

IMPORTANT:
The user is cautioned that changes not expressly approved by Balboa Instruments, Inc. could void the user's authority to operate the equipment.

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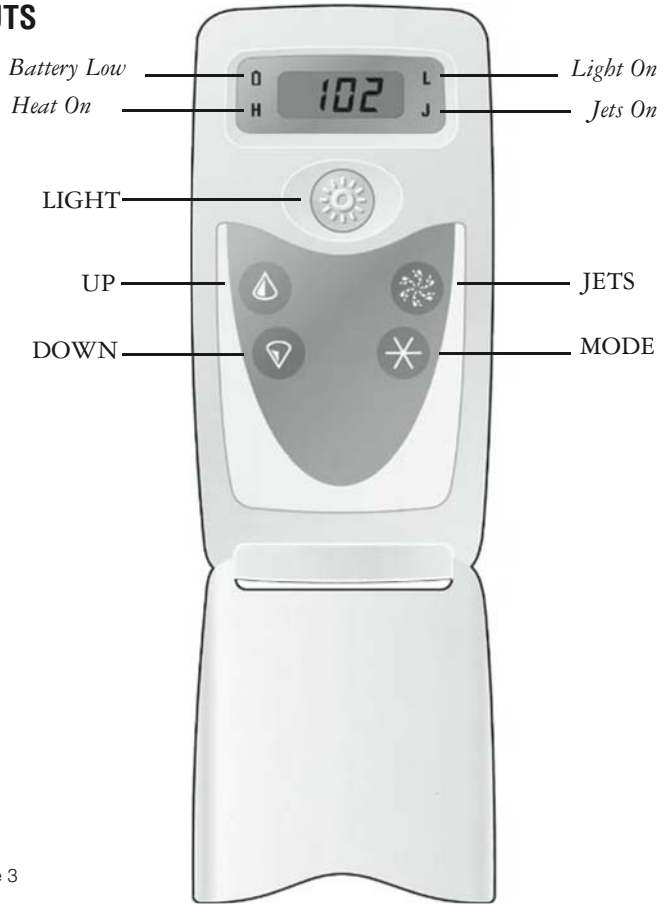
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SPAMONITOR ILLUSTRATION AND BUTTON CALL OUTS



CAUTION:
Pull with your fingernail from either top corner tab to open.



SPAMONITOR INSTALLATION

Perform the following three steps to install your SpaMonitor:

Step 1: Install the Base Station

The Base Station is designed for installation beneath the spa skirt, near the spa control unit. The Base Station interfaces with the control unit through an 8-pin cable, which plugs into a main panel jack in the control unit.
To install the Base Station, follow the steps below.

1. Shut off power to the spa via the GFCI circuit breaker or house panel circuit breaker.
2. Remove the spa skirt access panel to allow access to the control unit.
3. Remove the control unit cover.
4. Remove the screw holding the cable clamp in place.
5. Plug the Base Station cable into one of the unused Main Panel jacks on the control circuit board.
6. Route the Base Station cable through one of the unused cable clamp slots, close the cable clamp and tighten the screw.
7. Replace the control unit cover, then screw into place.
8. Find a location to mount the base station. Some general guidelines for mounting are as follows:
   A. The unit can be mounted with screws, tie-wraps or double-sided foam tape.
   B. Position the unit with the arrow pointing up.
   C. Locate the unit on the side of the spa that faces the house.
   D. Mount as high as practical to maximize range.
   E. Avoid mounting behind metal objects such as metal framing or the control box.
   F. Mount away from pumps, blowers and high-voltage cables whenever possible.

Step 2: Train the SpaMonitor

1. Turn off the power to the spa. After 15 seconds, turn the power back on. This puts the Base Station in training mode for 30 seconds.
2. About 10 seconds after turning the power back on, hold the UP and DOWN buttons until "trn" appears on the display. Release the buttons. The SpaMonitor will beep twice if the Train Command was performed successfully. If "Err" is displayed, see page 10 for possible causes.

Step 3: Install the SpaMonitor

The SpaMonitor must be mounted in a location where it receives a strong signal from the Base Station at all times. This will ensure that if a noteworthy problem occurs at the spa, the SpaMonitor will be able to alert the homeowner.

A signal quality test has been built into the SpaMonitor and can easily be activated by the homeowner.

Note: The SpaMonitor(s) must be trained before the signal quality can be tested.

1. Find a suitable location for mounting the SpaMonitor. The location should be convenient for the homeowner, while as close to the spa as practical. Avoid mounting the SpaMonitor near the following:
   A. heat sources (such as radiators, air ducts and sunlight)
   B. areas of excessive moisture (such as a bathroom)
   C. television sets and other electronic equipment
   D. cordless telephones
   E. personal computers
   F. microwave ovens
   G. electric motors
   H. other wireless devices
2. Hold the SpaMonitor in the approximate location it would be mounted.

3. Hold the JETS and LIGHT buttons down at the same time for about 6-9 seconds. A number will be displayed. Release both buttons.
   A. If the number displayed is 24, this is a good location for mounting the SpaMonitor. Continue to Step 4.
   B. If the number is 23 or less, a better location needs to be found.
   C. In general, move closer to the spa, and away from obstacles that may block the signal such as: fireplaces, metal appliances, bathroom plumbing, etc.
   D. Repeat the above steps until a suitable location is found.

Note: If suitable signal quality cannot be achieved in a desired mounting location, try repositioning the base station to see if that improves it.

4. Mount the wall bracket with the included mounting hardware as follows:
   A. <u>For Sheetrock or Plaster</u>
      1. Hold the wall bracket on the wall in its desired location.
      2. With a pencil, mark a dot on the wall in the center of the two mounting holes.
      3. Drill two 3/16" holes (3/4" to 1" deep) in the wall where the dots are located.
      4. Insert the plastic anchors into the two holes. Tap the anchors with a hammer until only the round head shows.
      5. Hold the wall bracket over the anchors and secure by screwing the two screws into the anchors.
   B. <u>For Wood Surfaces</u>
      1. Hold the wall bracket on the wall in its desired location.
      2. With a pencil, mark a dot on the wall in the center of the two mounting holes.
      3. Drill two 3/32" holes (1/2" to 3/4" deep) in the wall where the dots are located.
      4. Hold the wall bracket over the drilled holes and secure by screwing the two screws into the holes.

Note: When the SpaMonitor is not in use, placing it on the wall bracket will ensure that it has a good signal, and can alert the homeowner to any problems with the spa.

START UP:

1. Press any button to wake up the SpaMonitor if the display is blank. Once the SpaMonitor is awake:
   A. The LCD and indicator icons will display the status of the spa.
   B. The SpaMonitor can send commands to the spa with button presses similar to those of the main spa panel.
   C. Always wait for the button press to take effect. There is a small delay as the signal is passed from the SpaMonitor to the spa and a response is verified.
   D. The SpaMonitor will stay awake for 15 seconds after the last button press.

Note: The button press used to wake up the SpaMonitor will not send a command to the spa.

TO DISPLAY WATER TEMPERATURE:

In most cases, you should already see the water temperature displayed. It may be alternating with one or more messages (listed on pages 13-15 of this document).

1. If the display shows "Ecn," the spa is in Economy Mode:
   A. Press the JETS button while the SpaMonitor is displaying "Ecn" to turn on the Jets(1) pump. *At this point the spa will be in Standard-in-Economy Mode, indicated by "SE" on the display. If your spa is equipped with a circ pump, it turns on with the Jets pump.*
   B. It takes approximately two minutes for the spa to read the water temperature after the pump starts. During this time the SpaMonitor will go back to sleep.
   C. After two minutes has elapsed, press the JETS button to display the water temperature.

If the display shows "SLP" alone, the spa is in Sleep Mode and will not show the current water temperature except during a filter cycle. *(See next page for instructions on changing mode.)*

BUTTON OPERATION



Light

The LIGHT button on the SpaMonitor works exactly like the LIGHT button on your main panel. Exception: If your spa has fiber-optic light operation controlled by the FIBER button on an ML900 main panel, the LIGHT button on the SpaMonitor works exactly like the FIBER button on that panel.





Up/Down

Press the UP or DOWN button once to display the set temperature. Each time either button is pressed again, the set temperature will increase or decrease depending on which button is pressed. After three seconds, the LCD will automatically display the last measured spa temperature.



Mode

This button is used to switch between standard, economy, and Sleep Modes. Press MODE to enter mode programming, press DOWN to cycle through to the desired mode (LCD flashes until confirmed), then press MODE to confirm selection.



Jets

The JETS button on the SpaMonitor works like the JETS1 button on your main panel (or like the JETS button if your main panel has only one Jets button).

TRAINING AND CLEARING

Why Training and Clearing

Each SpaMonitor and Base Station has a unique address assigned to them at the time of manufacture. The SpaMonitor and Base Station must learn the address of the other in order to communicate with each other. This learning process is accomplished with the **Train Command**. A SpaMonitor can only learn the address of one Base Station; however, a Base Station can learn the address of up to six SpaMonitors. This enables up to six SpaMonitors to monitor and control a single spa.

The **Clear Command** is used to untrain a SpaMonitor from a Base Station. It clears the Base Station address from the memory of a SpaMonitor and the SpaMonitor address from the memory of the Base Station.

The **Clear All Command** is used to untrain all SpaMonitors trained to a particular Base Station. This function is useful if a SpaMonitor is lost or stolen and you want to make sure that it can no longer communicate with your spa.

Train Command

This command trains a SpaMonitor and a Base Station to communicate with each other. The SpaMonitor should be located between 10 and 20 feet from the Base Station when performing the Train Command.

To perform the Train Command:

1. Turn off the power to the spa. After 15 seconds, turn the power back on. This puts the Base Station in training mode for 30 seconds.
2. About 10 seconds after turning the power back on, hold down the UP and DOWN buttons until "trn" appears on the display. Release the buttons. At this time, the SpaMonitor will beep twice if the Train Command was performed successfully.
3. If "Err" appears on the display, the Train Command was not performed successfully. Possible causes may be:
   A. The Base Station is not powered up.
   B. The Base Station is not in training mode.
   C. There is a problem with the RF communication. Confirm that you were between 10 and 20 feet from the Base Station when performing the Train Command.

Clear Command

This command is used to untrain a SpaMonitor from a Base Station. It clears the Base Station address from the memory of a SpaMonitor and the SpaMonitor address from the memory of the Base Station.

Perform this command if you no longer want a SpaMonitor to communicate with the Base Station.

The SpaMonitor should be located between 10 and 20 feet from the Base Station when performing the Clear Command.

To perform the Clear Command:

1. Press the DOWN and LIGHT buttons until “CLr” appears on the display. Release the buttons. At this time, the SpaMonitor will beep twice if the Clear Command was performed successfully. “CLr” will flash for five seconds and then the display will be blank.
2. If “Err” appears on the display, the Clear Command was not performed successfully. Possible causes may be:
   A. The Base Station is not powered up.
   B. The Base Station is not trained to the SpaMonitor Panel.
   C. There is a problem with the RF communication. Confirm that you were between 10 and 20 feet from the Base Station when performing the Clear Command.

Clear All Command

This command erases the addresses of all the SpaMonitors from a Base Station as well as clearing the Base Station address from the memory of the SpaMonitor initiating the command. **Once the Clear All Command has been executed, no SpaMonitor will be able to communicate with the Base Station.** Communication can be re-established by performing a Train Command for each SpaMonitor that you would like to communicate with the Base Station.

The SpaMonitor should be located between 10 and 20 feet from the Base Station when performing the Clear All Command.

To perform the Clear All Command:

1. Press the JETS and UP buttons until "CLA" appears on the display. Release the buttons. At this time, the SpaMonitor will beep twice if the Clear All Command was performed successfully. "CLA" will flash for five seconds and then the display will be blank.
2. If "Err" appears on the display, the Clear All Command was not performed successfully. Possible causes may be:
   A. The Base Station is not powered up.
   B. The Base Station is not trained to the SpaMonitor Panel.
   C. There is a problem with the RF communication. Confirm that you were between 10 and 20 feet from the Base Station when performing the Clear All Command.

DIAGNOSTIC MESSAGES

Message	Meaning	Action Required
Std	The spa is operating in Standard Mode.	Temperature display is current after pump has been running for at least two minutes.
Ecn	The spa is operating in Economy Mode.	"Ecn" will appear solid on the display when the temperature is not current. "Ecn" will alternate with the temperature when the temperature is current.
SE	The spa is operating Standard-in-Economy Mode.	Operates the same as Standard Mode, then reverts to Economy Mode after 1 hour. Press MODE to switch directly to Economy Mode.
SLP	The spa is operating in Sleep Mode.	"SLP" will appear solid on the display when the temperature is not current. "SLP" will alternate with the temperature when the temperature is current.
tSt	The spa is operating in Test Mode. The SpaMonitor is unable to operate normally in Test Mode.	Contact your distributor or authorized dealer to have the spa switched back to User Mode.

Consult your main panel documentation for the meaning of any additional three-letter messages that may appear on the SpaMonitor display. If you have an ML900 panel, messages appear in a text format on a 12-character display. See the table on the next two pages for a cross-reference between the three-character display on the SpaMonitor and the text messages on the ML900.

ML900 MESSAGE CROSS-REFERENCE TABLE

Diagnostic Messages

SpaMonitor	ML900
dr	HEATER MAY BE DRY- WILL RETEST SHORTLY
dry	HEATER DRY SERVICE ROD
HFL	HTR FLOW LOW
ICE	FREEZE COND
LF	LOW FLOW
OHH	HTR TEMP LMT SERVICE ROD
OHS	SPA TEMP LMT
PHH	PH IS HIGH LOWER PH
PHL	PH IS LOW RAISE PH
Pr	PRIMING MODE
SAH	SANITIZER HIGH
SAL	SANITIZER LOW
Sby	STANDBY MODE
SnA	SENSOR A SERVICE ROD

ML900 MESSAGE CROSS-REFERENCE TABLE

Diagnostic Messages (Continued)

SpaMonitor	ML900
Snb	SENSOR B SERVICE ROD

SpaMonitor		ML900
SnS	alone	SENSOR SYNC
SnS	alternating with temperature	SENSOR SYNC SERVICE ROD

Reminder Messages

SpaMonitor	ML900
rCA	CHANGE MINERAL CARTRIDGE
rCH	NEW FILTER
rCL	CLEAN FILTER
rCO	CLEAN COVER
rdr	DRAIN WATER

SpaMonitor	ML900
rPH	CHECK PH
rSA	CK SANITIZER
rt9	TEST GFCI
rtr	TREAT WOOD

Press the MODE or UP/DOWN button to reset and clear the reminder from the display.

ALARMS

One of the key functions of the SpaMonitor is to continuously monitor the health of the spa. About once an hour, the SpaMonitor automatically wakes up and sends a message to the spa controller asking if any critical problems have been detected. If any problems have been detected, the SpaMonitor sounds an alarm by beeping once every 20 seconds and flashing the LED's on the display until the alarm is acknowledged.

The alarm can be acknowledged by pressing any button on the SpaMonitor. When a button is pressed, the unit will beep every two seconds and the cause of the alarm will be displayed for about 15 seconds. When the display clears, the beeping will stop and the SpaMonitor will go back to sleep. Until the alarm condition is corrected, each time the SpaMonitor is manually awakened (by pressing any button), the unit will beep every two seconds and the cause of the alarm will again be displayed for about 15 seconds.

Note: If the SpaMonitor cannot establish communications with the Base Station over a three-hour period of time, it will sound an alarm. When awakened by a button press, it will display "no SPA". This condition can be caused by either a power loss at the spa (a critical issue in a winter climate) or by the SpaMonitor being too far away from the base station. It will also occur if the Base Station is not properly connected to the spa control circuit board.

Note: If the SpaMonitor sounds an alarm when it is awakened (by pressing any button) and it has not sounded an alarm up to this time, this is a critical problem that has just been detected by the SpaMonitor.

The SpaMonitor will display the same kind of diagnostic message your main spa panel displays. For example, in the case of heater overheat condition, the SpaMonitor will display "OHH". (Exception: If your main spa panel is an ML900, see the cross reference chart on pages 14-15 of this manual to correlate the three-character message on the SpaMonitor with the 12-character message on the ML900.)

Low Battery Alarm

Once the SpaMonitor detects a low battery condition, it will beep (and light the Battery Low LED) several times a minute until you wake it up and see the “Lo bAt” display. From that point on, it will not beep (or light the LED) when not awake, but will show “Lo bAt” part of the time while awake. Replace the batteries as soon as possible by removing the battery cover and installing three new AAA alkaline batteries.

Note: If you replace the batteries with batteries that are weak, it may take up to a day before the SpaMonitor will start alerting you to a low battery condition.

REPLACING A BASE STATION

If you ever have to replace the Base Station, you must perform the Train Command with your SpaMonitor(s). *See page 10.* If you have more than one SpaMonitor, perform the Train Command with each one.

REPLACING A SPAMONITOR

If you ever have to replace a SpaMonitor, perform the following sequence:

1. With the new SpaMonitor, perform the Train Command.
2. With that same SpaMonitor, perform the Clear All Command. This clears all SpaMonitor addresses from the Base Station, including the address of the failed or missing SpaMonitor.
3. Perform the Train Command again with the new SpaMonitor. If you have more than one SpaMonitor, perform the Train Command with each one.

THINGS TO AVOID

Be careful to avoid pressing two buttons at the same time during normal use. Certain button combinations put the SpaMonitor into special test modes which are not covered in this manual. If the SpaMonitor accidentally gets put into a special test mode and does not operate normally, wait 15 seconds for the SpaMonitor to go into Sleep Mode. It should return to normal operation upon awaking. If not, remove the battery cover from the back of the unit, then remove and reinstall one of the batteries. This should reset the SpaMonitor to normal operation.



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