MLM990H User Manual

Panel Software Version 1.3.0

Note: Mach 3 EL and GL systems function identically, but
conform to different International requirements.
This user guide will refer to EL systems only.

BALBOA water group

Important Notices

WARNING: People with infectious diseases should not use a spa or hot tub.

WARNING: To avoid injury, exercise care when entering or exiting the spa or hot tub.

WARNING: Do not use a spa or hot tub immediately following strenuous exercise

WARNING: Prolonged immersion in a spa or hot tub may be injurious to your health

CAUTION: Maintain water chemistry in accordance with the Manufacturers instructions.

CAUTION: The equipment and controls shall be located not less than 1.5 meters horizontally from the spa or hot tub.

CSA COMPLIANCE/CONFORMITÉ

CAUTION:

- Test the ground fault circuit interrupter before each use of the spa.
- Read the instruction manual.
- Adequate drainage must be provided if the equipment is to be installed in a pit.
- For use only within an enclosure rated CSA Enclosure 3.
- Connect only to a circuit protected by a Class A ground fault circuit interrupter.
- To ensure continued protection against shock hazard, use only identical replacement parts when servicing.
- Install a suitably rated suction guard to match the maximum flow rate marked.

WARNING:

- Water temperature in excess of 38°C may be injurious to your health.
- Disconnect the electrical power before servicing.

ATTENTION:

- Toujours verifier l'efficacite du disjoncteur differentiel avant d'utiliser differentiel avant d'utiliser le bain.
- Lire la notice technique.
- Lorsque l'appareillage est installe dans une fosse, on doit assurer un drainage adequat.
- Employer uniquement a l'interieur d'une cloture CSA Enclosure 3.
- Connecter uniquement a un circuit protege par un disjoncteur differentiel de Class A.
- Afin d'assurer une protection permanente contre le danger de shock electrique, lors de l'entretien employer seulement des pieces de rechange identiques.
- Les prises d'aspiration doivent etre equipees de grilles convenant au debit maximal indique.

AVERTISSEMENT:

- Des temperatures de l'eau superieures a 38°C peuvent presenter un danger pour la sante.
- Deconnecter du circuit d'alimentation electrique avante l'entretien.

WARNING/ADVERTISSEMENT:

- Disconnect the electric power before servicing. Keep access door closed.
- Deconnecter du circuit d'alimentation electrique avant l'entretien. Garder la porte fermer.

WARNING! SHOCK HAZARD! NO USER SERVICEABLE PARTS.

Do not attempt service of this control system. Contact your dealer or service organization for assistance. Follow all owner's manual power connection instructions. Installation must be performed by a licensed electrician and all grounding connections must be properly installed.

FCC STATEMENT

This equipment has been tested and complies with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy. Correct installation and proper use greatly reduce the likelihood of harmful interference to radio communications, although it does not diminish the possibility entirely.

If harmful interference is detected when turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: (1) Re-orient or relocate the receiving antenna; (2) Increase the separation between the equipment and the receiver; or (3) Connect the equipment into an outlet on a different circuit from the one to which the receiver is connected.

The user is cautioned that changes and modifications made to this equipment without the approval of the manufacturer could void the user's authority to operate this equipment and violate FCC Regulations.

SAVE THESE INSTRUCTIONS

EL SERIES CONTROL WITH MLM990H PANEL

The MLM990H panel can be used with the EL8000, EL2000 and EL1000 systems. System software version 29 or higher is required for full functionality of this panel. This user guide lists all features that are available. The features shown on your panel menus may vary depending on the system and equipment used.

LEDs are lit when functions are on

Arrow Left   ←
Arrow Up   ↑
Arrow Right   →
Arrow Down   ↓
Select   ⊙
To exit a menu, Arrow Left   ←

102°F

09:10 AM ▭ Standard Mode
Fast Keys Spa Music Set

NETWORK CONNECTIONS

Establishing a Network Connection
Home > Set > ⊙ > Link Panel > ⊙ .

To link your wireless panel to the system, press ⊙ . Follow the on-screen instructions:

> **Shut off power to spa.**
> **Turn spa power back on and**
> **then push select on this**
> **panel within 30 seconds.**

Additional screens will follow: "Linking Panel...Wait..."; then, "Panel Linked Successfully". "Starting Up" will also blink.

If the "Priming Mode" screen appears, follow the instructions. You'll probably choose "Exit Priming Mode" if you're simply creating a link from the Wireless Panel to the Spa Control System. Allow the panel to acquire your system information.

Network/Link another Panel to Control System
Home > Set > ⊙ > Network > ⊙ .

Wireless Network:

1) "Panel ID". This is a 12 digit unique ID given to wireless panels when they are added to the system.

2) "Link other Device". To link to another device such as another wireless panel or PC based software from an already added wireless panel, go to "Link other device", press ⊙ from an already added panel. Then go to "Link Panel" on the device that you want to link to on the spa system. Press ⊙ .

3) Unlink All. To unlink/remove all RF devices already added to the spa system.

Menu Panel Start Up

PANEL START-UP AND NAVIGATION KEYS

Press and hold the ⊙ button for three seconds to turn the Wireless panel on. Be certain that you are within range for the panel to find the spa. If the panel doesn't find the signal to the spa, "No Spa Found" will appear. The panel must also be "linked" to work. (See previous page.) Thereafter, use the front panel buttons to move within the menus: Up ↑ , Down ↓ , Left ← or Right → . ⊙ chooses your menu selection. To exit most menus and go back to Home, press the left arrow key until the Home display screen appears.

Initial Spa Start-up
If the panel is started up during spa start-up, it may go into Priming Mode, which will last for less than 5 minutes. During Priming Mode, you are allowed to control Jet functions. You can choose to exit the Priming Mode. Highlight your choice, then ⊙ . (Follow the on-screen instructions.)

After exiting the Priming Mode, the spa begins to maintain the water temperature if in Standard mode. The Home display screen will appear after completion of Priming Mode.

Home Display Screen (or "Home")
The basic function keys on the main display screen are "Fast Keys", "Spa", "Music", and "Set". The spa temperature will appear after the pump has ran for a minute. The "Standard" heat mode is displayed in this example. Directly below the temperature shows the status as it is acquired. Thereafter, the line is blank and is reserved to show alerts should they occur. Note: Depending on your installed equipment, the screen may look different.

Battery Display and Keeping the Panel Charged
A battery icon is shown in the Home and the Fast Keys pictorial screens. Both examples (Screen A & B) show that the battery is getting low and the wireless panel needs charging. When not in use, keep your panel in its cradle. While your panel is charging, the battery icon will flash.

102°F
Acquiring System Config.
03:05 PM ▭ Standard Mode
Fast Keys Spa Music Set

Home Display Screen (Screen A)

Setting the Spa Temperature on the Home Screen
On the Home display screen, press ↑ .
Set the desired spa temperature with ← or → , then ↓ to return Home. Times out after 5-10 seconds.

Setting the Time
The time should be set first. All timed functions are dependent on this. Starting at the Home display screen, highlight "Set", then press ⊙ .
Use the arrow keys to highlight "Time of Day". Press ⊙ .

Press ↑ or ↓ to change hour. → to highlight minutes.

Press ↑ or ↓ to change minutes. → to highlight AM.

Press ↑ or ↓ to choose AM or PM.

To Save and Exit: ⊙ .

The option to change the time format (AM or PM) is found under: Set > User Settings > Time format.

FAST KEYS

Fast Keys allows you to quickly view the status of a programmed device and change it. For example, from the Home display screen, highlight Fast Keys. Pressing ⊙ will show a menu with the four directional keys, their preassigned functions, and status.

In the example, "Jets 1" is on Low; Up Arrow (↑) toggles Jets 1 High/Low. "Jets 2" is not installed, "Blower" is not installed; Spa "Light" is Off. Down Arrow (↓) toggles the spa lights On or Off. The spa temperature is shown in the upper right corner. A battery icon displayed in the lower left corner shows the condition of the battery.

Home (⊙) to go back to the Home display screen.

Jets 1 L   75° F
Jets 2   Blower
NA   NA
        Light Off   Home
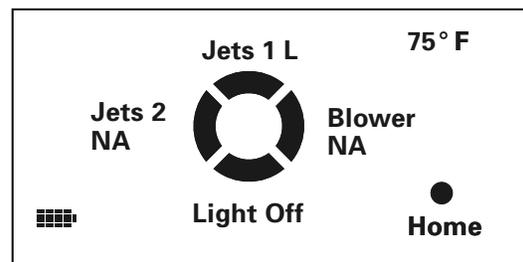
Fast Keys Pictorial Screen (Screen B)

CONTROLLING SPA FUNCTIONS

From within the "Spa" menu, you can access devices on your system. You can also view the status of devices you have installed on your system.

Home > Spa > ⊙ > Spa Functions menu.

The Spa Functions menu displays only the equipment that is installed on your system; equipment may include: Jet Control, Lighting, Blower, etc. Highlight the selected device, then press ⊙ . Use the direction keys to move within each menu and press ⊙ to turn the device On or Off, or to advance through the available speeds (High/Med/Low).

If you do not have a device installed, the menu will not include it.

Time Out Notes
The pump responsible for heating and filtration (pump 1 low on non-circ systems, or the circ pump on circ systems) will be referred to simply as the pump.

Time-outs refer to a preset length of time that a function is programmed to operate before shutting off automatically. Certain conditions (filters or freeze) can cause a function to operate longer, while faults can cause a function to operate for a shorter length of time. The system keeps track of time-outs regardless of other conditions occurring.

Jet Control
You can turn a pump on or off, and shift between high and low speeds if equipped. If left running, pump 1 will turn off after a time-out period. The pump 1 low speed time-out on some systems may be as long as 4 hours.

On non-circ systems, the low speed of pump 1 runs when the blower or any other pump is on. It may also activate for at least 1 minute every 30 minutes to detect the spa temperature (polling) and then to heat to the set temperature if needed, depending upon the mode. When the low speed turns on automatically, it cannot be deactivated from the panel; however, the high speed may be started.

Lighting
Spa Light: On/Off; or, High/Med/Low or Off
Or,
Fiber - Light (Wheel-On)
Fiber - Light (Wheel-Off)
Fiber - Off

Blower
1-speed operation: On/Off
2-speed operation: High/Med or Off
3-speed operation: High/Med/Low or Off
If left on, the blower will automatically turn off after a time-out period.

Mister
Mister Control: On/Off

Options
Option 1: On/Off; Option 2: On/Off
Option 3: On/Off; Option 4: On/Off

Note: Options have no timeout. Options may include Waterfall, TV, CD, etc. In the case of a Lift, "On" means the lift is raised; "Off" means the lift is lowered.

Chemistry
The panel provides a readout of the pH and ORP values in your spa. This option will appear only if your spa is equipped with pH/ORP board and sensors.

Standby Mode
Standby mode turns off all spa functions temporarily. This is helpful when changing a filter. With "Standby Mode" highlighted, pressing ⊙ will result in:

```
┌─────────────────────────────────┐
│                                 │
│  Press Select to Enter          │
│  Enter Standby Mode             │
│                                 │
│         Back                    │
│                                 │
└─────────────────────────────────┘
```
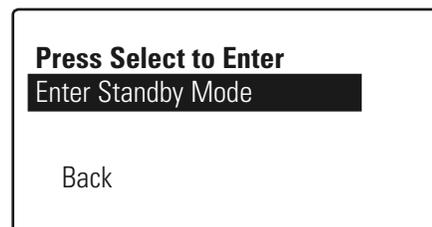
Pressing ⊙ again will result in:

```
┌─────────────────────────────────┐
│                                 │
│  Entered Standby Mode           │
│                                 │
│  Exit Standby Mode              │
│                                 │
└─────────────────────────────────┘
```
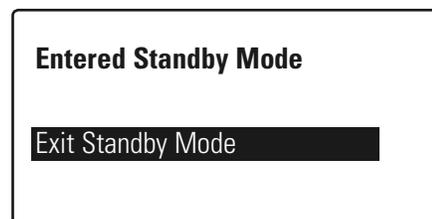
(There may be additional options on this screen on some systems.)

Press ⊙ again to exit. Otherwise, system will revert to previous mode after 1 hour.

Stir
Stir turns on all pumps at high speed for 5 minutes. Stir is normally used after adding chemicals to the water.

Programming

Set Menu
Home > Set > ⊙ > Spa Settings > ⊙ .

In the "Set" menu (shown on the Home display screen), you can preset (program) the equipment on your system, and view diagnostic and software version information.

From within the "Spa Settings" menu, choose which setting you'd like to change by using the arrow keys.

Set Temp
From within "Spa Settings", highlight "Set Temp", ⊙ , ← or → to set the temperature, ⊙ .

(Note: The available range for adjustment of spa temperature is 80°F - 104°F [26.0°C - 40.0°C], and may be as low as 70°F in some cases). The last measured spa temperature displayed is current only when the pump has been running for at least 1 minute.

Note: To change the format from Fahrenheit to Celsius, access the "User Settings" within the "Spa Settings" menu. See User Settings under this section.

Filter Cycles
Home > Set > ⊙ > Filter Cycle > ⊙ .

You are not required to set filter cycles; however, it is an option available to you.

On all systems, the pump and the ozone generator will run during filtration. At the start of each filter cycle, the blower will run briefly on its highest speed to purge the air channels. The lowest speed of any other pumps and the Mister will also run briefly. On some circ systems, Pump 1 may also run for the duration of the filter. There are two filter cycles per day.

The start/end times of each cycle are programmable.

To program the cycles, the clock must be set. Under "Spa Settings", highlight "Filter Cycle" and ⊙ .
Select Filter Cycle 1 or 2 by pressing ← or →.
Arrow Down to the Start Time, then ⊙ .
Select ↑ or ↓ to choose the "Start Time" hour.
Press → to change minutes, then use the ↑ or ↓ to select the minutes start time.

Arrow Right to change AM or PM on a 12 hour clock (see "User Settings" if you don't see AM or PM). Press ⊙ to Save. Arrow Down to "Stop Time" and repeat. Once finished, Arrow Left to Exit or resume to set Filter Cycle 2.

If you would like to select continuous filtration, set the Filter 1 start and end times to be the exact same time. In this case, Filter 2 Start Time only controls when the second purge happens. Filter 2 end time will be unavailable.

Note: The menu panel requires that filters be set by time of day, not duration. If you add a menu panel to an existing system that uses a non-time-capable panel, this system needs to be reconfigured by your installer.

Fast Keys – Programming
Home > Set > ⊙ > Fast Keys > ⊙ .

Here you can designate how each key will respond when accessing the Fast Keys menu. The following equipment are available for each of the four Fast Keys: Jets 1-6, Blower, Spa, Light, Fiber Optic, Either Light, Mister, Option 1-4, Stir (see "Additional Features"), or None. (Only equipment available on your spa is listed.)

In the menu "Program Fast Keys", highlight a directional key to program, then ⊙ . Scroll to the device you choose to place on the Fast Keys menu. For more options, Arrow Right (→). Choose your device by highlighting it. Press ⊙ .

Left Arrow (←) to go back to the "Program Fast Keys" menu to program the other Fast Keys. If you wish to go Home, continue pressing ←.

Mode or Heat Mode
Home > Set > ⊙ > Mode > ⊙ .

This screen allows you to choose Standard, Economy, or Sleep modes when using the heater. Select the mode, then ⊙ .

"Standard Mode" maintains the desired temperature. Note that the last measured spa temperature displayed is current only when the pump has been running for at least 1 minute.

"Economy Mode" heats the spa to set temperature only during filter cycles.

Turning on Jets 1 while in Economy mode puts the spa in Standard-In-Economy mode, which operates the same as Standard Mode, then reverts to Economy Mode automatically after 1 hour. During this time, entering the Mode Menu will revert to Economy Mode immediately.

"Sleep Mode" heats the spa to within 20°F (11°C) of the set temperature only during filter cycles.

Time of Day

Home > Set > ⊙ > Time of Day > ⊙ .

Under "Set Time of Day", follow the on screen instructions: Press Up or Down to change; the left and right arrow keys designate what to change: hour, minute, AM or PM. ⊙ to Save. If you wish to change the time format from a 12 to 24 (24/12), please see User Settings, Time Format.

User Settings

Home > Set > ⊙ > User Settings > ⊙ .

Pressing ⊙ on any setting within the User Settings menu toggles the choices:

1) Temp Format, F to C.
2) Time Format, 12HR/24HR
3) Dolphin Address: 0 (zero) - 7. (Note: If the Dolphin setting is inadvertently changed, the Dolphin will stop working. See Dolphin manual for addressing one or two Dolphins.)
4) Temp Lock, On/Off.
5) Panel Lock, On/Off. When the pop-up dialog box appears, "While pop-up is displayed…", enter the following button sequence: Left, Right, ⊙ .

   A dialog box will appear stating that the panel is locked. A flashing "Panel Locked.." will appear on the Home screen.

   To unlock the panel, press ⊙ . Then while the dialog box "Panel Locked.." appears, enter the same button sequence: Left, Right, ⊙ .
6) Suppress Reminders, On/Off.
   When Suppress Reminders is "On", Reminders are never displayed on the panel. When "Off", Reminders are displayed on the panel periodically.

Panel Settings

Home > Set > ⊙ > Panel Settings > ⊙ .

- **Contrast**
  ⊙ again on "Contrast" to adjust the "LCD Contrast" using the arrow keys (◄–/–►). ⊙ to finish and exit. Arrow Left (◄–) to exit and to return to "Spa Settings".

- **Backlight**
  ⊙ again on "Backlight" to adjust the "Backlight Timeout" using the up/down arrow keys. When finished, Arrow Left (◄–) to exit and to return to "Spa Settings".

- **Panel Timeout**
  ⊙ again on "Panel Timeout" to adjust the length of time before the panel times out by using the up/down arrow keys. When finished, Arrow Left (◄–) to exit and to return to "Spa Settings".

  The Panel Timeout does not apply when the panel is on the charger.

- **When on Charger**
  ⊙ again on "When on Charger" to adjust whether the backlight will stay lit while being charged or will Timeout. Use the up/down arrow keys. When finished, Arrow Left (◄–) to exit and to return to "Spa Settings".

- **Key Beep**
  ⊙ again on "Key Beep" to adjust whether the key will beep or not when pressed. When finished, Arrow Left (◄–) to exit and to return to "Spa Settings".

Diagnostics: Fault Log, GFCI Test & More

Home > Set > ⊙ > Diagnostics > ⊙ .

In "Diagnostic Info", use the direction keys to scroll, then press ⊙ to view your settings. ◄– to exit.
The available menus are (depending on your system):

1) Versions/Version Information.
   System and Panel version information is found here. If you call technical support, you may be required to provide this information.
2) Sensor Temperatures (Sensors A & B)
3) Fault Log. Press ⊙ to display Fault Log.
4) GFCI Test
5) Switches-Bank A. ⊙ . Option A1-A12, On/Off
6) Switches-Bank B. ⊙ . Option B1-B6, On/Off (depending on system, you may also have B7-B12)
7) Configuration Signature
8) Heater Wattage
   Arrow Left (◄–) to return to "Spa Settings".

Link Panel

Home > Set > ⊙ > Link Panel > ⊙ .

This feature is used to link your wireless panel to the system. *Please refer to page 3, "Network Connections".*

Network

Home > Set > ⊙ > Network > ⊙ .

1) Allows addition of another wireless panel to system,
2) Unlinks all devices that are already on the system,
3) Displays the unique panel ID given to added panels.

Please refer to page 3, "Network Connections".

Additional Features Settings and Miscellaneous

Freeze Protection
If the temperature sensors within the heater detect a low enough temperature, then the pump(s) and the blower automatically activate to provide freeze protection. The pump(s) and blower will run either continuously or periodically depending on conditions.

In colder climates, an optional additional freeze sensor may be added to protect against freeze conditions that may not be sensed by the standard sensors. Auxiliary freeze sensor protection acts similarly except with the temperature thresholds determined by the switch. See your dealer for details.

Clean-up Cycle
Any time you turn a pump or blower on, that will begin a clean-up cycle for 30 minutes, unless shut off sooner. The pump and the ozone generator will run for one to four hours, depending on the system.

Circ Pump
If your system is equipped with a circ pump, it may have been configured to work in one of three different ways:

1) The circ pump operates continuously (24 hours) with the exception of turning off for 30 minutes at a time when the water temperature reaches 3°F (1.5°C) above the set temperature (most likely to happen in very hot climates).

2) The circ pump stays on continuously, regardless of water temperature.

3) The circ pump will come on when the system is checking temperature (polling), during filter cycles, during freeze conditions, or when another pump is on.

Ozone
On most systems, the ozone generator (if installed) runs during filter cycles (except when pump 1 is operating at high speed on a non-circ system) and during clean-up cycles. On some systems, the ozone generator operates whenever the pump runs.

If your system is configured with the optional ozone suppress feature, the ozone generator will turn off for 1 hour any time you change the state of any equipment (Jets 1, Jets 2, Blower, etc.) on the spa.

Reminder Messages
Reminders are displayed above the time as shown.
(See next page for Reminder Messages.)
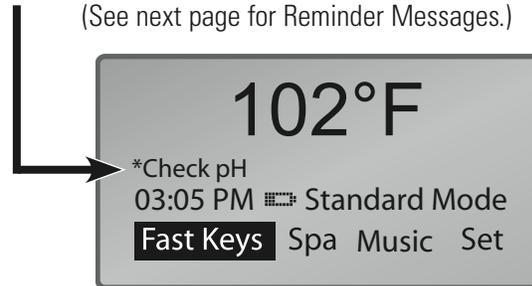
To dismiss a reminder, highlight it and press ⊙ . The dismissed reminder will no longer be seen on the Home screen.

If additional reminders appear on the screen, follow the same procedure for each reminder to be dismissed. Note: You can only manually dismiss reminders and faults with an asterisk before them.

MENU PANEL STEREO CONTROL

If a Jensen Stereo® is installed on your spa, the MLM990H menu panel can control the basic stereo functions. Refer to http://service.balboa-instruments.com/appnotes/

Under the "Balboa Application Notes" list, choose Entertainment Products > Jensen Stereo Products > Menu Panel Stereo Operation Guide.

USER CAN SUPPRESS ALL REMINDERS IN USER PREFERENCES.

Message*	Frequency**	Action Required
Check pH	Every 7 days	Test and adjust pH chemical levels per manufacturer's instructions.
Check Sanitizer	Every 7 days	Test and adjust sanitizer chemical levels per manufacturer's instructions.
Clean Filter	Every 30 days	Remove, clean, and reinstall filter per manufacturer's instructions.
Test GFCI	Every 30 days	Test & reset GFCI per manufacturer's instructions.
Drain Water	Every 90 days	Drain and refill spa per manufacturer's instructions.
Clean Cover	Every 180 days	Clean and condition cover per manufacturer's instructions.
Treat Wood	Every 180 days	Clean and condition wood per manufacturer's instructions.
Change Filter	Every 365 days	Install new filter.
Change Cartridge	As needed	Install new Mineral cartridge.

* All of these Periodic Messages can be disabled individually by the spa manufacturer.

** Any of these frequencies may be changed by the spa manufacturer.

GFCI PROTECTION AND TESTING

Note: The GFCI section does not apply on EL systems used outside the United States and Canada.
This GFCI section does not apply to the GL systems.

GFCI Protection

Your spa may be equipped with a GFCI Protection feature. If your spa does have this feature enabled, the GFCI Trip Test must occur to allow proper spa function.

Within 1 to 7 days after startup, the spa will trip the GFCI to test it. (The number of days is factory programmed.) The GFCI must be reset once it has been tripped. After passing the GFCI Trip Test, subsequent GFCI trips will indicate a ground fault or other unsafe condition requiring the power to the spa to be shut off.

Warning: The Owner should test and reset the GFCI on a regular basis to verify its function.

GFCI Test Procedure

The installer can cause the GFCI Trip Test to occur sooner by initiating it with the following button sequence.

Home > Set > ⊙ > Diagnostics > ⊙ > GFCI Test > ⊙ > GFCI Trip > ⊙ .

The GFCI should trip within several seconds and the spa should shut down. If it does not, shut down the power and manually verify that a GFCI breaker is installed and that the circuit and spa are wired correctly. Verify the function of the GFCI with its own test button. Restore power to the spa and repeat the GFCI Trip Test.

Once the GFCI is tripped by the test, reset the GFCI and the Spa will operate normally from that point.

You can verify a successful test by pressing:
Home > Set > ⊙ > Diagnostics > ⊙ > GFCI Test, and verifying that it says "Passed" on the top line of the GFCI test screen.

Diagnostic Messages

MESSAGE	MEANING	ACTION REQUIRED
No Message on Display	Power has been cut off to the spa.	The control panel will be disabled until power returns. Time of day will be preserved for 30 days with a battery back-up on EL8000 systems. EL1000 and some EL2000 systems reset the time of day on each power-up. Spa settings are preserved on all systems.
Heater Overheat	"Overheat" - The spa has shut down.[1] On some systems, an alarm may sound. One of the sensors has detected 118°F (approximately 47.8°C) at the heater.	DO NOT ENTER THE WATER. Remove the spa cover and allow water to cool. Once the heater has cooled, reset by using a Fast Key. If spa does not reset, shut off the power to the spa and call your dealer or service organization.
Spa Overheat	"Overheat" - The spa has shut down.[1] One of the sensors has detected that the spa water is 110°F (approximately 43.3°C).	DO NOT ENTER THE WATER. Remove the spa cover and allow water to cool. At 107°F (approximately 41.7°C), the spa should automatically reset. If spa does not reset, shut off the power to the spa and call your dealer or service organization.
Freeze Condition	"Ice" - Potential freeze condition detected.	No action required. The pumps and the blower will automatically activate regardless of spa status.
Sensor A Fault	Spa is shut down.[1] The sensor that is plugged into the Sensor "A" jack is not working.	If the problem persists, contact your dealer or service organization. (May appear temporarily in an overheat situation and disappear when the heater cools.)
Sensor B Fault	Spa is shut down.[1] The sensor that is plugged into the Sensor "B" jack is not working.	If the problem persists, contact your dealer or service organization. (May appear temporarily in an overheat situation and disappear when the heater cools.)
Sensor Sync	Sensors are out of balance.	This may just be a temporary condition, and may clear itself.
Sensor Sync Fail	Sensor failure. The spa is shut down.[1]	Contact your dealer or service organization.
Heater Flow Low	A substantial difference between the temperature sensors was detected. This could indicate a flow problem.	Check water level in spa. Refill if necessary. If the water level is okay, make sure the pumps have been primed. Highlight the message and press ⊙ to reset.
Low Flow	Persistent low flow problems. (Displays on the fifth occurrence of the "Heater Flow Low" message within 24 hours.) Heater is shut down, but other spa functions continue to run normally.	Follow action required for "**Heater Flow Low**" message.
Heater May Be Dry	Inadequate water detected in heater.	Check water level in spa. Refill if necessary. If the water level is okay, make sure the pumps have been primed. Will reset automatically after 15 minutes, or highlight and press ⊙ .

[1] On some systems even when spa is shut down, some equipment may occasionally turn on to continue monitoring temperature or if freeze protection is needed.

MESSAGE	MEANING	ACTION REQUIRED
Heater Dry	Inadequate water detected in heater. (Displays on third occurrence of the above message.) Spa is shut down.[1]	Follow action required for the above message. Spa will not automatically reset; highlight and press ⊙ to reset.
---°F or ---°C	Temperature unknown.	After the pump has been running for 1 minute, the temperature will be displayed.
---°F or ---°C	Temperature not current in Economy or Sleep mode.	In Economy or Sleep mode, the pump may be off for hours outside a filter. If you wish to see the current spa temperature, either switch to Standard mode or turn Jets 1 on for at least 1 minute.
pH Low	pH is low.	Add pH increaser according to manufacturer's instructions.
pH High	pH is high.	Add pH reducer according to manufacturer's instructions.
Sanitizer Low	Sanitizer is low.	Add sanitizer according to manufacturer's instructions.
Sanitizer High	Sanitizer is high.	Remove spa cover and allow sanitizer to dissipate.
RTC Failure	Hardware failure.	Contact your dealer or service organization.
Persistent Memory Fail	Hardware failure.	Contact your dealer or service organization if message appears on more than one power up.
Checksum Failure	Firmware install problem.	Contact your dealer or service organization if message appears on more than one power up.
Configuration Error	System configured incorrectly. Menu panel displays errors:	Contact your dealer or service organization
GFCI Failure	Spa could not trip GFCI.	Contact your dealer or service organization. Continued operation may be unsafe.
Stuck	A pump appears to be stuck on, causing the water temperature to creep up, possibly to hazardous levels.	POWER DOWN SPA IMMEDIATELY. DO NOT ENTER THE WATER. Contact your dealer or service organization
HOT - Call Service	A pump appears to have been stuck on the last time spa was powered.	POWER DOWN SPA IMMEDIATELY. DO NOT ENTER THE WATER. Contact your dealer or service organization.

For the Configuration Error row, the menu panel displays:

Configuration Error		
P 2.2	PS.1	---
P 3.2	P6.1	---
P 4.1	bL.1	---
Check Config. Settings		

1 **On some systems even when spa is shut down, some equipment may occasionally turn on to continue monitoring temperature or if freeze protection is needed.**

BALBOA
water group