



Topside Error Codes

The Spas firmware is designed to detect most errors, and then the CPU will provide feedback for the user on the topside, mobile application and by flashing the lights on the spa.

1.1.1 Error Codes

Error Code	Description
Prr	Temperature probe is disconnected from the base board
HL (Flashing)	Over temperature. The water temperature of the spa is > 112°F (44.5°C)
HL	High limit. The temperature of the heater barrel is > 119°F (48°C)
FLO	Flow Switch Open. The flow switch is reading no flow while pump 1 is running.
FLC	Flow Switch Closed. The flow switch is reading flow while pump 1 is off.
OtH	Heater barrel is heating too quickly. Only checked while the heater is on.
FrEEzE ProtEct	Freeze protect mode. Starts when the water temperature is < 50°F (10°C) and ends when the water temperature reaches 59°F (15°C)
dEcl	Requested feature would overload the breaker and as a result has been declined.
GF	Requested function has been disabled due to a suspected ground fault.
LocP	Topside has been partially locked
LocF	Topside has been fully locked
tSt	When spa is powered up it performs a check to see if the hi-limit probe is attached to the heater barrel. While this is happening “tSt” will be displayed.
HPt	If the heater probe test fails then HPt will be displayed.
Hd	If the hi-limit probe is disconnected from the board “Hd” will be displayed.
pH	If Spa-Boy is installed and the pH is above 8.2 “pH” will be displayed.

1.1.1 Temperature Probe Error Prr

A Temperature Probe Error may occur when the temperature probe is disconnected from the base board. If the temperature probe is disconnected, the spa pack has no feedback to control the heater and temperature. As a result, the heater is prevented from running to avoid the water temperature from reaching unsafe levels. When the temperature probe is disconnected the message “**Prr**” is displayed on the topside.

1.1.2 Over Temperature Error HL (Flashing)

If the water temperature reaches 112°F (44.5°C) or greater an Over Temperature Error is triggered. Temperatures in excess of 112°F (44.5°C) can cause injury to bathers, as a result the heater and pumps are disabled to prevent further heating of the water. The topside display flashes “**HL**” on the screen to signal an Over Temperature.

1.1.3 High Limit Error HL (Solid)

If the temperature of the heater barrel is > 119°F (48°C) a High Limit (HL) Error is triggered. The HL error is detected in hardware and if an HL error is detected then a pin is set on the CPU to signal the CPU of the error. In the event of an HL error the heater is shut off to prevent the temperature of the heater barrel from increasing and to prevent damage to the heater barrel which could result in fire, injury, or damage to the spa. The topside will display “**HL**” on the screen (no flash) indicating the high limit and power needs to be cycled to the spa in order to clear this error.



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1.1.4 Flow Switch Errors FLO and FLC

There are two different types of flow switch errors. If the flow switch is reading no flow while pump 1 is running, the flow switch is open (FLO), then there is no water flowing through the heater. “**FLO**” is displayed on the topside and the heater is prevented from running. If the flow switch is reading flow while pump 1 is off, the flow switch is closed (FLC), then there could be a problem with the flow switch. In the event of an FLC error the heater is also prevented from running and “**FLC**” is displayed on the topside. If the heater is allowed to run without water flowing through the heater, the heater will over heat and risk damage to the spa and fire.

1.1.5 Heater Barrel Temperature Rate Error Oth

The spa pack checks the rate that the heater barrel is heating to ensure that it is not heating too quickly. If the heater barrel is heating too quickly, the spa pack stops the heating process and tries to resume heating after a cool down and pumping period. The heater barrel should be heating at a slow rate and if that limit is exceeded, then there is likely a problem with the heater. This error helps to prevent damage to the heater and fire. In the event of a rate error the message “**Oth**” is displayed on the topside.

1.1.6 Freeze Protection FrEEzE ProtEct

If the water temperature goes below 50°F (10°C) the spa enters freeze protect mode. The pumps start in stages to keep the water moving and help heat the water. If the water freezes in the lines, the spa can be extensively damaged. When freeze protect mode is in effect, “**FrEEzE ProtEct**” is scrolled across the topside periodically.

1.1.7 Breaker Overload Error dEcl

A Breaker Overload Error is used to prevent the current limit of the breaker connected to the spa from being exceeded. If a device requests to be turned on, but the load on the line would exceed the limit of the breaker, the CPU first checks if a heater is running on the line of the requested device. If the heater is running then it is turned off, and the requested device is turned on. Otherwise the device’s request to be turned on is declined and the topside displays the message “**dEcl**”.

If the heater is the requested device, the CPU checks if the heater will exceed the breaker’s limit. If it will exceed the limit, then the heater is declined. When a heater is declined there is no message displayed on the topside.

1.1.8 Ground Fault Errors GF

A ground fault occurs when there is a short to ground. This ground fault will trigger a ground fault interrupter (GFI) which cuts power to the spa. If a ground fault is suspected, then a GFT can be run to determine where the short is located. Once the short is located the relay is disabled. If the spa attempts to trigger a relay where a ground fault has occurred, the relay is prevented from triggering, and the topside displays “**GF**”. To restore function to the relay, the relay needs to be manually enabled from the ground fault menu.

1.1.9 Hi-limit Probe Errors HPt and Hd

If the heater probe test fails then “**HPt**” will be displayed on the topside. Find the hi-limit probe and re-attach to the heater barrel.

If the hi-limit probe is disconnected from the board “**Hd**” will be displayed on the topside. Find the High Limit Probe board connection if not connected connect. If connected disconnect and clean terminals and then re-connect.

1.1.10 pH Error Codes (pH)

If Spa-Boy is installed and the pH is above 8.2 then “**pH**” will be displayed on the topside. Add the required quantify of Salt Water Balance to lower the pH.