



Technical Specifications

Pegasus "Sensations" Multifunction Whirlpool Control System with Glass Touch Pad

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Rev. Draft 0

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Summary

1. Hardware description	3
1.1. Touch Keypad	4
2. Functional description	5
2.1. Water level detection.....	5
2.2. Pump control	5
2.3. Blower control.....	5
2.4. RGB control.....	6
2.5. Control states	8
Fig. 5 – Blower control state diagram.....	8
3. Revision History	9

1. Hardware description

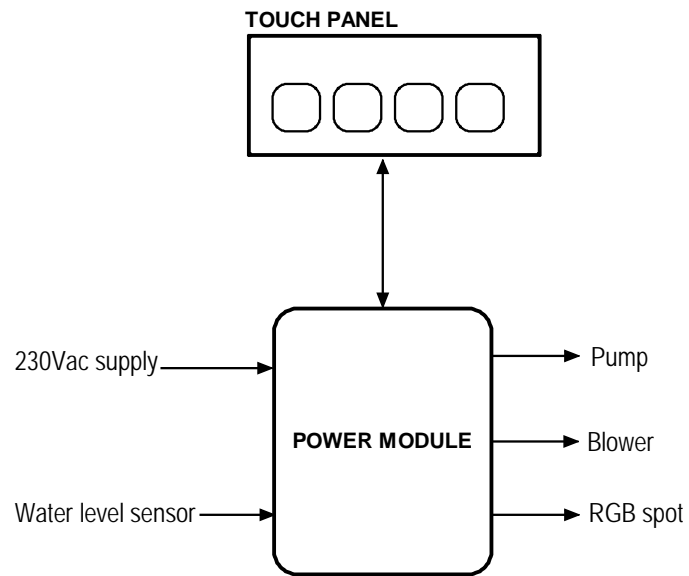


Fig. 1 – System overview

0.1.Touch Keypad

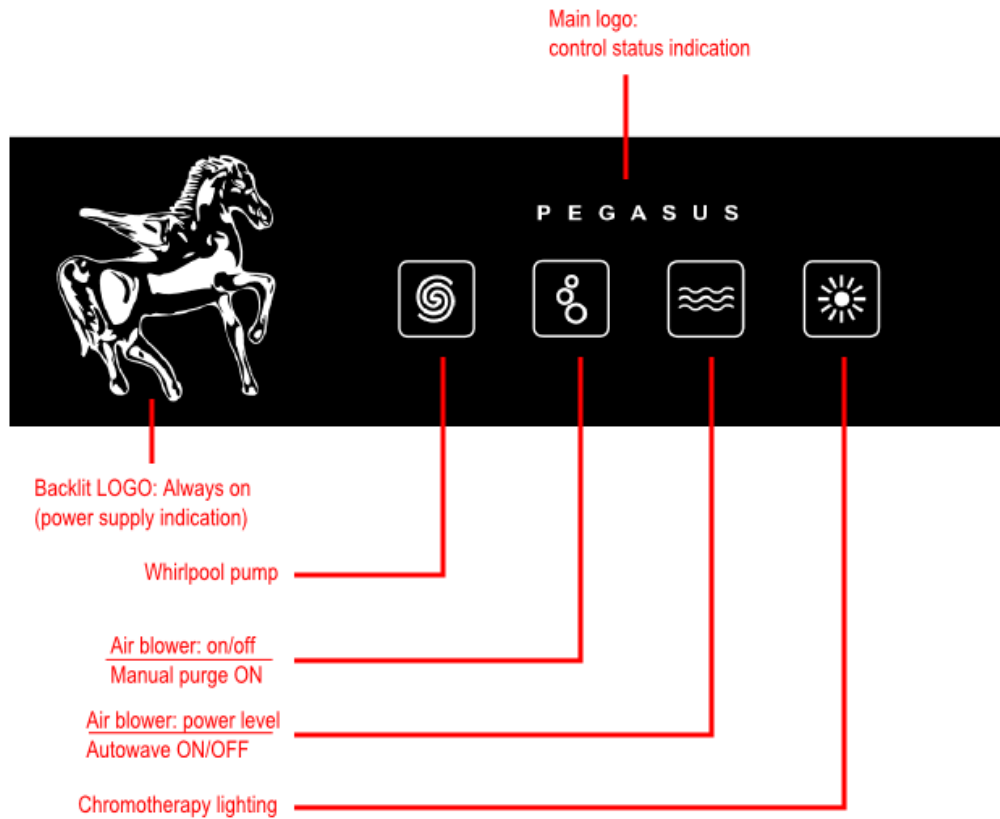


Fig. 2 – Keypad layout



Whirlpool pump

Long press: starts/stops the Whirlpool Pump.
Function enabled if water level.



**Air blower on/off
Manual Purge**

Long press with water level: starts/stops the Blower (starts at medium power level).
Long press with empty tub: forces a *Manual Purge*.



Air blower power level / AutoWave

Enabled only when blower is on.
Short press: selects the blower's power level (5 levels).
Long press: starts/stops the Auto Wave



Chromotherapy lighting

Selects the RGB colour (fixed colour or colour programme)



Logo

Control status indication:
Fixed white: Idle mode (standby), no water level, all functions off.
Fixed blue: Ready mode, water level detected
Flashing red: low water level alarm while pump and/or blower are active
Flashing blue: Pipework Purge sequence in progress

1. Functional description

1.1. Water level detection

The system detects the water level by a capacitive level sensor. The level signal must be stable for 3 sec before the control validates it, to limit false triggering.

1.2. Pump control

The pump is started / stopped by a long press of . In case of no water level, the button is disabled. When the pump function is active, the button is BLUE, when off the button is WHITE.

1.3. Blower control

The blower is started / stopped by a long press of . In case of no water level, the button is disabled.

When the blower function is active, both the button and are BLUE. When off, both buttons are WHITE.

The user can select 5 different power levels. The blower starts at power level 2. All power transitions are gradual to limit inrush current over the mains power line.

Once the blower is on, it is possible to

- adjust the power level by pressing (short press). This will cycle all the 5 levels.
- Start/stop the AutoWave level by pressing (long press – see next par.).

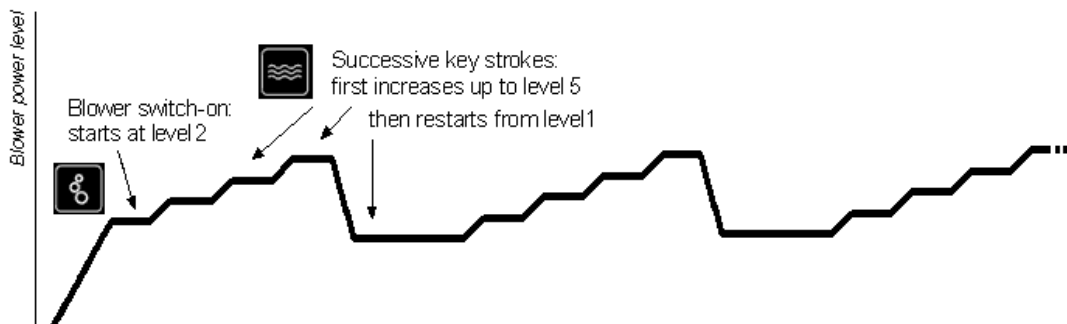


Fig. 3 – Blower power level control

3.3.1 Auto Wave

Once the Blower is started, pressing for 1,5 sec will start / stop the Auto-Wave mode. The blower automatically cycles its power level as in Fig. 4, producing a wave effect in the tub.

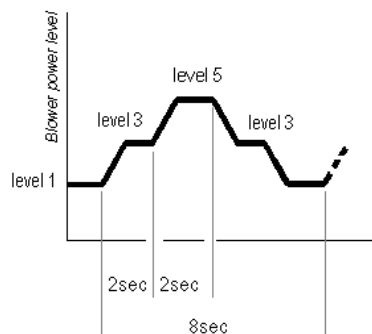



Fig. 4 – Blower Auto Wave function

1.3.1. Pipework Drying (Purge)

In order to remove any residual water inside the pipework, the blower is started for 1,5 min, either manually (Manual Purge) or automatically (Auto Purge). While in Purge sequence, the logo is blinking blue.

The Manual Purge can be started in Idle mode (see next) by a long press of 

The Auto Purge is started by the control at the end of a bath session, or after a level has been detected in the tub. In particular, any time the control records a water level followed by a water low level, a 10' timer is started and the logo blinks. If no subsequent level is detected within 10', the blower is started with the following sequence:


- low power for 10"
- medium power for 20"
- high power for 60"

Finally, the control enters Idle mode (all functions off).


1.4. RGB control

The control is capable of driving up to two RGB spots in parallel.

Spotlight control is not tied to water level, so the user can start/stop the RGB function at any time by a long

press of . When the RGB function is on, the button is BLUE, otherwise is WHITE.

As the RGB is started, the first colour is WHITE (full colour), then the user can select a different fixed colour

or a colour programme by clicking on  (short press). There are 11 fixed colours and 5 colour programs (see Table 1), the last button click will turn the RGB off.

A colour programme is a self-repeating cross-fading sequence of colours. It begins first with spots turned off, then there is a slow ramp-up to the first colour in the program, finally the RGB starts cycling the colour sequence.

Two shortcuts have been implemented:

1) if the user starts the RGB (WHITE colour) and then presses the button again for 1,5sec, the control first shows the LIGHT BLUE, then jumps directly to the first automatic sequence (ENERGY) skipping all the fixed colours in between.

2) Any time the user presses the button for 1,5 sec (except while in WHITE), the RGB is turned off immediately.

The RGB function has a timeout of 20 min, reloaded at each press of 

In case of black-out, or intentional power switch-off, the RGB function is not preserved (at power-on, the function will be off).

Button click #	Type	Description
1	Fixed Colours	WHITE (full color)
2		LIGHT BLUE (<i>keep pressing as a shortcut to jump to Sequence #1 "ENERGY"</i>)
3		BLUE
4		PURPLE
5		MAGENTA
6		RED
7		PINK
8		ORANGE
9		YELLOW
10		APPLE GREEN
11		GREEN
12	Automatic Sequence	Sequence #1 "ENERGY"
13		Sequence #2 "TONIC"
14		Sequence #3 "RELAX"
15		Sequence #4 "SUN"
16		Sequence #5 "DREAM"
17		RGB off

Table 1 – RGB colour program selection



Sequence ID	Colours	Duration of each colour step
1. ENERGY	Red	30"
	Orange	30"
	Yellow	30"
	White	30"
	Yellow	30"
	Orange	30"
	<i>(repeat the sequence)</i>	
2. TONIC	Yellow	30"
	Red	30"
	Green	30"
	<i>(repeat the sequence)</i>	
3. RELAX	Blue	30"
	Green	30"
	White	30"
	Green	30"
	<i>(repeat the sequence)</i>	
4. SUN	Yellow	20"
	Orange	15"
	Yellow	20"
	Light blue	15"
	Yellow	20"
	White	15"
	<i>(repeat the sequence)</i>	
5. DREAM	Green	60"
	Blue	60"
	Light blue	60"
	White	60"
	Orange	60"
	Red	60"
	Purple	60"
<i>(repeat the sequence)</i>		

Table 2 –Auto Sequences



1.5. Control states


At power on, the control enters *Idle* mode (all functions are off) waiting for a water level.

In *Idle* mode, the logo is WHITE and only RGB and Manual Purge can be started by the user (see next).

As water level is detected, the control switches to *Ready* mode, waiting for the user to start a function (pump and/or blower). The logo changes to BLUE.

As the first function is started, the control enters *Running* mode, the logo keeps BLUE and a 20 min session timeout is started. In *Running* mode, the user can start/stop pump and blower, adjust blower power level and start/stop the AutoWave. All these functions are stopped either manually or by the 20 min session timeout.

Either cases, the control reverts to *Ready*, waiting for the pump and/or blower start again. If the level drops, instead, the control enters a 10' delay state (*Delay to purge*), waiting a refill. The logo is blinking blue. If refill is not detected within the 10' timeout, the Automatic Purge is started. While in this 10' delay state, the user

can directly start the Purge by a long press of .

While in *Running* mode, a water low level triggers an *Alarm* mode. The logo is blinking red and the control suspends all functions, waiting for a water refill within a 10' timeout. If the level is detected again, the control resumes the session (returns to *Running*): pump and blower are restarted, whichever was active. The blower is restarted at the same level when paused (the AutoWave is also restarted if active).

If the level is not detected and the 10' timeout expires (or, meanwhile, the user has manually stopped all functions) the *Delay to purge* state is entered, as described above.

In case of loss of power supply, all states are lost, at the next power-on the control will start in Idle mode.

To summarize, fundamental concepts are:

- functions can be started when water is present;
- if water has been detected at least once, the control has to complete a Purge sequence before entering *Idle* mode again. The Purge can be manually anticipated, or can be delayed in case a refill is detected within 10'
- logo signalling helps identify the current control state (i.e. if logo is blinking blue, then a Purge sequence is about to start or is in progress).
- RGB function can always be started/stopped

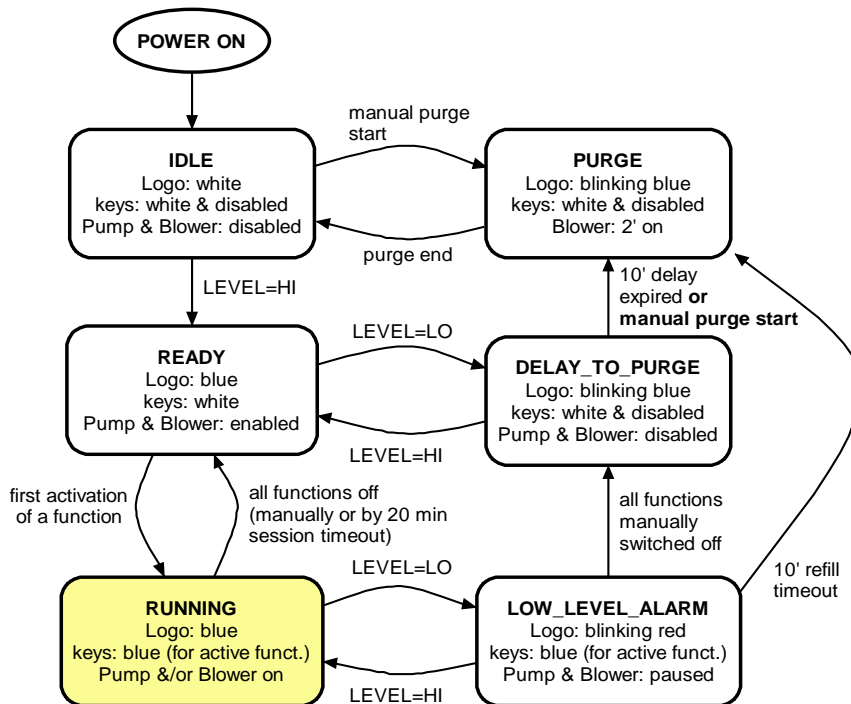


Fig. 5 – Blower control state diagram



2. Revision History

Rev	Data	Modifiche
Draft0	24-07-2012	First release