## **BP100G2 Tech Sheet**

Customer: Balboa Water Group

Part Number: 59267 5.5kW 800 Incoloy

59268 4.0kW 800 Incoloy

For more information PLEASE VISIT



**Custom Box Overlay** 

Box Overlay Part Number N/A

UL System Model For 5.5kW: BP1-BP100G2-BU
UL System Model For 4.0kW: BP1-BP100G2-BS
Software Version ID: M100 230 V48.0

Software Version: 48.0

File Name: BP100\_48.0\_BP100G2.hex

Configuration Signature: F402B0EF

Eng. Project Number: 5205

Control Panels (See later pages for more information):

spaTouch™2 Any version (version 2.0 or later required for bba™2 fully integrated functionality)

lcon spaTouch™ Any version (version 3.36 or later required for bba™2 fully integrated functionality)

Menued spaTouch™ Any version (version 2.8 or later required for bba™2 integrated functionality)

TP900 Version 3.1 and later (Version 3.13 or later required for bba™)

TP800 Version 3.1 and later (Version 3.13 or later required for bba™; version 4.11 or later required for bba™2 integrated functionality)

TP600 Version 2.7 and later (Version 2.12 or later required for bba™/bba™2 On/Off control via menu)

TP400T US Version 2.7 and later (TP400T CE may be used) (Version 2.12 or later required for bba<sup>™</sup>/bba<sup>™</sup>2 On/Off control via menu)

TP400W US Version 2.7 and later (TP400W CE may be used) (Version 2.12 or later required for bba<sup>™</sup>/bba<sup>™</sup>2 On/Off control via menu)



## **System Revision History**

Part #	EPN	Date	Originator	Changes Made
59267 59268	5205	05-01-19	BWG	Generic BP100G2 system, supporting most of the Setups the BP100 board can do with a pump expander board.

bba™ & bba™2 (Balboa Bluetooth Amp) connection is documented seperately.

bba<sup>™</sup> is integrated into graphic display panels (TP800, TP900 and spaTouch<sup>™</sup>). With TP600/TP400, use the "BT" entry on the menu to toggle bba<sup>™</sup> power On/Off. bba<sup>™</sup>2 is integrated into graphic display panels (TP800, TP900 and spaTouch<sup>™</sup>). With TP600/TP400, use the "BT" entry on the menu to toggle bba<sup>™</sup>2 power On/Off.

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## **Basic Functions Setup 1 - 4**

#### **Power Requirements:**

240VAC, 50/60Hz\*, 48A, Class A GFCI-protected service (Circuit Breaker = 60A max.), 4 wires [hot, hot, neutral, ground]

120/240VAC, 50/60Hz\*\*, 16/40A, Class A GFCI-protected service (Circuit Breaker = 20/50A max.) -- **Setups 3 & 4 Only** 3 or 4 wires [hot, hot (optional), neutral, ground].

#### \*\*NOTE:

The above 120V spec is <u>only</u> when using a wall-mount GFCI / breaker. If using a GFCI cord, the breaker is <u>15A</u> and so the service is limited to <u>12A</u>.

## If using a GFCI cord, the breaker is <u>15A</u> and so the service is limited to <u>12A</u>.

#### **HiPot Testing Note:**

Disconnect slip terminal with green wires from J6 prior to performing HiPot test. Failure to disconnect may cause a false failure of the test. Reconnect terminal to J6 after successful completion of HiPot test.

\*BP systems automatically detect 50Hz vs 60Hz. However, power frequency (50Hz vs 60Hz) is just one of many differences between North American (UL) and CE power, and it is because of these other differences that different BP systems must be used for UL vs CE territories. Also, there are a few countries that use CE power but 60 Hz (such as South Korea) which need CE systems, and a few countries that use UL power but 50 Hz which need UL systems.



## **Basic Functions Setup 1 - 4**

#### **System Ouputs:**

Pump 1	240VAC*		12A max heater pump r 20 GPM thro	15-minute timer (30-minute timer for P1 Low in non-circ Setupa 2 & 4 only) in Setups 2 & 4. ough heater
		1-Speed in	Setups 1 & 3	
Pump 2	240VAC	1-Speed Unused in S	12A max Setups 3 & 4	15-minute timer
Circ Pump	240VAC*		2A max heater pump r 20 GPM thro	Programmable Filtration Cycles + Polling in Setups 1 & 3. ough heater
0zone	240VAC*		.5A max	Slaved to Circ Pump in Circ Setups and to Pump 1 Low in Non-Circ Setups
Spa Light	10VAC	0n/0ff	1A max	240-minute timer.
A/V (Stereo)	) 120VAC	Hot	3A max	Always on
Heater	_	40VAC (approx 40VAC (1.0kW	< 1.4kW @ 12 @ 120VAC)	POVAC)

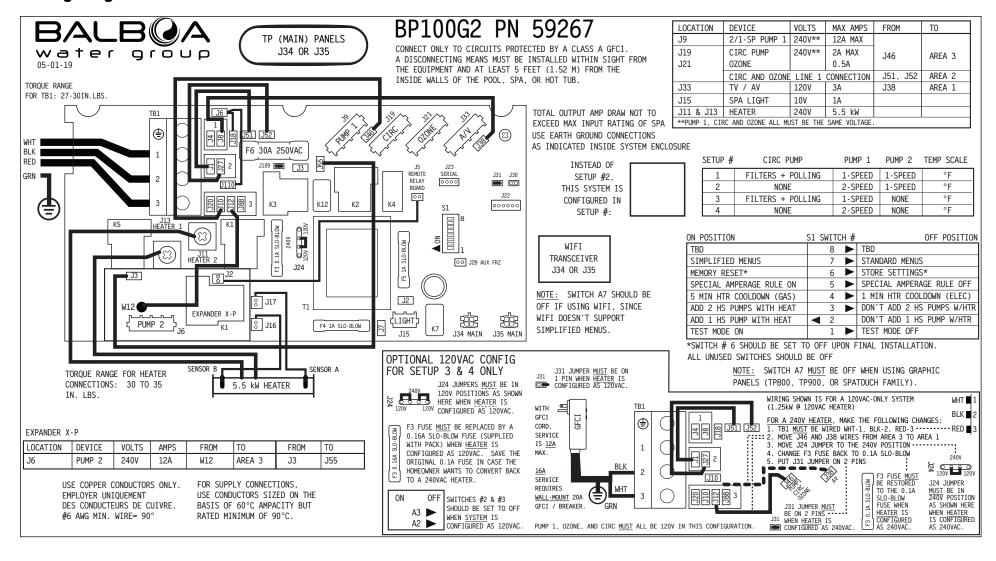
With 120VAC power input (for Setups 3 & 4 only), Pump 1, Circ pump and Ozone must all be 120V. See wiring diagram for rewiring instructions.



<sup>\*</sup>Pump 1, Circ Pump and Ozone must be the same voltage.

## **Hardware Setup**

#### **Wiring Diagram**



Manufactured under one or more of these patents. U.S. Patents: 5332944, 5361215, 5550753, 5559720, 5,883,459, 6253227, 6282370, 6590188, 6976052, 6965815, 7030343, 7,417,834 b2, Canadian Patent: 2342614, Australian patent: 2373248 other patents both foreign and domestic applied for and pending.



## **Setup Reference Table**

Setup #	Circ Pump	Pump 1	Pump 2	Temp Scale
1	Programmable Filtration + Polling	1-Speed	1-Speed	°F
2	None	2-Speed	1-Speed	°F
3	Programmable Filtration + Polling	1-Speed	None	°F
4	None	2-Speed	None	°F

System (and any replacement board) is shipped
in Setup 2



## **Changing Software Setups with spaTouch™ Icon-Driven Panels**

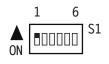
## Test Menu Access (S1, Switch 1 ON) Service Technician ONLY.

#### DANGER! HIGH VOLTAGE WILL BE ACCESSIBLE! SERVICE TECHNICIAN ONLY!

While the system is running, move DIP Switch 1 (on S1 on the Main circuit board) to ON. The system will enter Test Mode.

Moving DIP Switch 1 to OFF will exit Test Mode.

# ON ► 1 10 S1



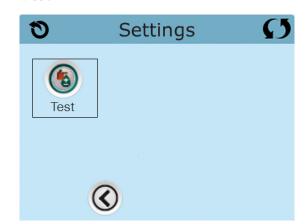
wider.

#### **To Change Software Setups:**

While in Test Mode, press the indicated icons to move from screen to screen.



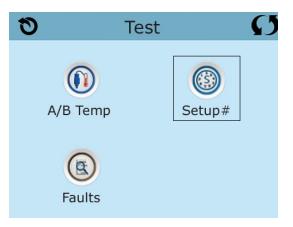




The example screens shown here are from the

spaTouch 1 Icon-Driven Panel, but the screens on the spaTouch 2 Panel are similar. The main

difference is that the spaTouch 2 display is



Once on the Setup Selection screen, press the Up or Down icon to select the desired Setup Number, then press the Check Mark icon to confirm and to have the spa restart.

After the system restarts, you may see a message that "The settings have been reset"; this is normal after changing Setups with DIP Switch 6 in the OFF position. Press "Clear" to dismiss this message.



Manufactured under one or more of these patents. U.S. Patents: 5332944, 5361215, 5550753, 5559720, 5,883,459, 6253227, 6282370, 6590188, 6976052, 6965815, 7030343, 7,417,834 b2, Canadian Patent: 2342614, Australian patent: 2373248 other patents both foreign and domestic applied for and pending.

## Changing Software Setups with TP800 / TP900 / spaTouch™ Menued Panel

### Test Menu Access (S1, Switch 1 ON) Service Technician ONLY.

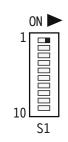
#### DANGER! HIGH VOLTAGE WILL BE ACCESSIBLE! SERVICE TECHNICIAN ONLY!

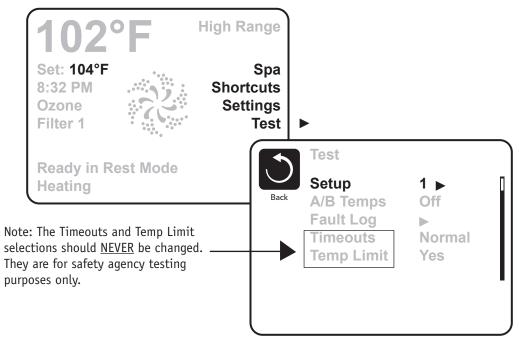
While the system is running, move DIP Switch 1 (on S1 on the Main circuit board) to ON. The system will enter Test Mode.

Moving DIP Switch 1 to OFF will exit Test Mode.

#### **Software Setups**

Under the TEST Menu, the Setup screen will allow changing the Setup from 1 to any number established by the Manufacturer. Changing the Setup may require wiring changes as well.







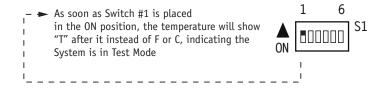
## **Changing Software Setups with TP600 / TP400**

#### Test Menu Access (S1, Switch 1 ON) Service Technician ONLY.

#### DANGER! HIGH VOLTAGE WILL BE ACCESSIBLE! SERVICE TECHNICIAN ONLY!

While the system is running, move DIP Switch 1 (on S1 on the Main circuit board) to ON. The system will enter Test Mode.

Moving DIP Switch 1 to OFF will exit Test Mode.



#### **Software Setups**

Under the TEST Menu, the Setup screen will allow changing the Setup from 1 to any number established by the Manufacturer. Changing the Setup may require wiring changes as well.

**You will have 1 minute** to complete the setup change after you manually exit Priming Mode. (Once familiar with the process, the Setup change should take less than 15 seconds.)











When the panel displays RUN PMPS PURG AIR, press any Temperature button ONCE to exit Priming Mode. You should see "---T" where the T indicates the system is in Test Mode.



Continued on Next Page.



## **Changing Software Setups with TP600 / TP400 Continued**

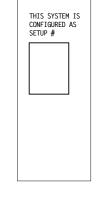
Again, You will have 1 minute to complete the setup change after you manually exit Priming Mode.

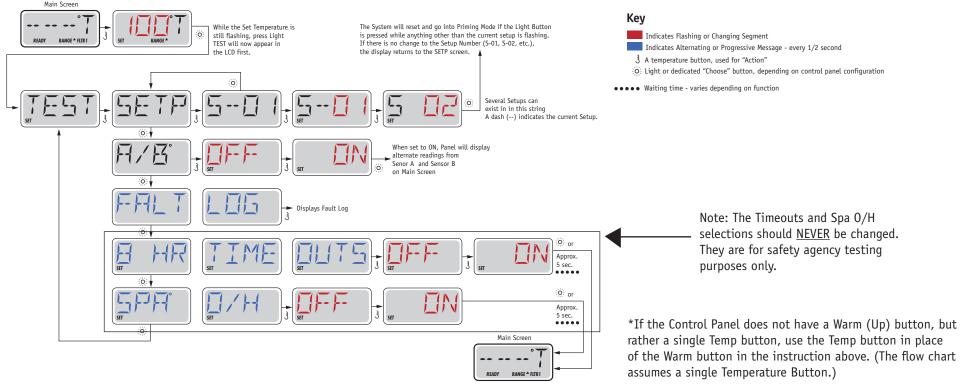
Immediately after exiting Priming Mode, press this sequence of buttons: Warm\*, Light, Warm, Warm, Warm, Warm. Continue to press Warm until the diplay shows the Setup Number (S-01, S-02, etc.) you want to switch to. When the correct setup number is showing, press Light once, and the system will reset, using the newly-selected Setup from that point on.

Move DIP Switch 1 to the OFF position to take the spa out of Test Mode. °F or °C will replace °T.

Using a permanent marker, write the Setup number on the Setup label mounted inside the system lid (right). This is very important to any service person in the future who may need to replace a circuit board or system and needs to change the Setup on a replacement part while in the field.

NOTE: Changing the Setup may require wiring changes as well - refer to the wiring diagram or wiring diagram addendum.





Manufactured under one or more of these patents. U.S. Patents: 5332944, 5361215, 5550753, 5559720, 5,883,459, 6253227, 6282370, 6590188, 6976052, 6965815, 7030343, 7,417,834 b2, Canadian Patent: 2342614, Australian patent: 2373248 other patents both foreign and domestic applied for and pending. © Copyright 2009 Balboa Water Group.



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# **Equipment Expansion**

**Expansion Features Control Connection** 

Relay 1 (J5)

Default

1-Speed Pump 2

None (uses main board 30A fuse)

Fuse



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## **DIP Switch Functions**

#### Fixed-fuction DIP Switches

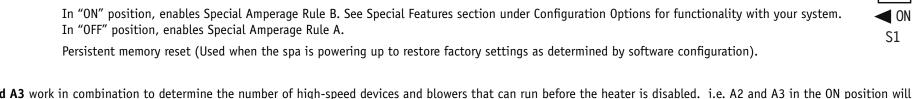
Test Mode (normally Off). A1

In "ON" position, add one high-speed pump (or blower) with Heater. A2

In "ON" position, add two high-speed pumps (or 1 HS Pump and Blower) with Heater. **A**3

Α5

A6



A2 and A3 work in combination to determine the number of high-speed devices and blowers that can run before the heater is disabled. i.e. A2 and A3 in the ON position will allow the heater to operate with up to 3 high-speed pumps (or two HS Pumps and Blower) running at the same time. Heat is disabled when the fourth high-speed pump or blower is turned on.

**Note:** A2/A3 all off = No heat with any high-speed pump or blower.

#### **Assignable DIP Switches**

In "ON" position, enables a 5-minute cooldown for some gas heaters (Cooling Time B). Α4

In "OFF" position, enables a 1-minute cooldown for electric heaters (Cooling Time A).

Α7 In "ON" position, Simplified Menus on TP400/TP600. Do not use graphic panels (TP800, TP900, or spaTouch™ family) with Simplified Menus.

In "OFF" position, Regular Menus on TP400/TP600. This setting is compatible with all panels.

Undesignated switches are not assigned a function.



## **Jumper Definitions**

J109	GFCI Test/Trip Enable/Disable  Note: This feature must be enabled in software as well.	J109 🚰
J30	Do Not Use	
J31	Jumper on 1 pin when heater voltage is 120V Jumper on 2 pins when heater voltage is 240V	J31 🔀

Jumper on center two pins (240V) when heater voltage is 240V.

Two Jumpers installed; one on left 2 pins and one on right 2 pins (120V) when heater voltage is 120V.

# J24 0 0 0 0 120V

#### Warning!

Setting DIP switches or jumpers incorrectly may cause abnormal system behavior and/or damage to system components. Refer to Switchbank illustration on Wiring Configuration page for correct settings for this system.

Contact Balboa if you require additional configuration pages added to this tech sheet.



# **Replacement Parts**

PCBA:

Main PCBA: 59269 Expander PCBA: 59232

**HEATER(s):** 

Heater: 58421 5.5kW 800Inc

58426 4.0kW 800Inc

Temp Sensor Kit: 30344KIT 12-inch sensor

30382KIT 24-inch sensor

**FUSES:** 

Part Number	Amperage	Location
30136	30A	F6
26983	1A	F4, F5
0/54/	0.44.010	En l

24514 0.1A SLO F3 when using 240V heater 26982 0.16A SLO F3 when using 120V heater

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#### **General Features**

Feature	Default	
Pump 1 in Filter Cycle (Circ Only)	No	
Pump 1 Low Timer	30 Minutes	Applies in non-circ Setups (configurations) only
General Pump Timer	15 Minutes	
Blower Timer	15 Minutes	
Mister Timer	15 Minutes	
Light Timer	240 Minutes	
Circ (when enabled)	Programmable + Polling	
Cleanup Cycle	30 Minutes	
Cleaup as Preference setting	Yes	
0zone	With Heater Pump*	
Ozone Suppression	OFF	
Pump Purge	60 Seconds	
Blower Purge	30 Seconds	
Mister Purge	5 Seconds	
Purge Type	Serial - Pumps at lowest	speed



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<sup>\*</sup> The heater Pump can be either a Circ Pump or Pump 1 Low.

#### **Temperature Features**

Feature Display Pefault

Temperature Display Perature Dis

All temperatures must be specified in °F. The system converts °F to °C dynamically. If Celsius is required for default settings, choose a desired °C value that (after rounding) corresponds to a Fahrenheit value.

°C	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
°F	39	41	43	45	46	48	50	52	54	55	<i>57</i>	59	61	63	64	66	68	70	72
°C	23	24	25	26	27	28	29	30	31	<i>32</i>	33	34	<i>35</i>	36	<i>37</i>	38	39	40	
°F	73	<i>75</i>	77	79	81	82	84	86	88	90	91	93	95	97	99	100	102	104	

Hi-Range Min. Set Temp	80°F
Hi-Range Max. Set Temp	104°
Hi-Range Default Temp*	100°
Lo-Range Min. Set Temp	50°F
Lo-Range Max. Set Temp	99°F
Lo-Range Default Temp*	70°F
Freeze Threshold	44°F

Freeze Type Rotating - Pumps at Lowest Speed

Temp Lock Type Temp + Settings



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<sup>\*</sup>May be changed by end-user (if enabled)

#### **Time Features**

Feature	Default
Time Format*	12 Hour
Filter 4 Chart Harry	20.00 (0.00 DM)
Filter 1 Start Hour*	20:00 (8:00 PM)
Filter 1 Duration*	2 Hours
Filter Cycle 2 Default*	OFF
Filler Cycle 2 Derault	UFF
Filter 2 Start Hour*	08:00 (8:00 AM)
Filter 2 Duration*	15 Minutes
Light Cycle	Disabled
Light Cycle Default*	OFF
Light Cycle Start Hour*	21:00 (9:00 PM)
Light Cycle Duration*	15 Minutes
Cooling Time A	1 Minute
Cooling Time B	5 Minutes

BALB@A

<sup>\*</sup>May be changed by end-user (if enabled)

#### **Reminder Features**

Feature	Default
Reminders Shown*	Yes
Check pH	<i>OFF</i>
Check Sanitizer	<i>OFF</i>
Clean Filter	30 Days
Test GFCI	OFF
Drain Water	100 Days
Change Cartridge	OFF
Clean Cover	OFF
Treat Wood	<i>OFF</i>
Change Filter	365 Days

BALB@A

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<sup>\*</sup>May be changed by end-user (if enabled)

No Limitation

## **Special Features**

Special Amperage Rule B

Feature Default
Special Amperage Rule A No Limitation

Drain Mode Disabled
Demo Mode Disabled
GFCI Trip Enabled
Automatic GFCI Test Disabled

Ozone Slaved to Heater Pump Yes

Dual Voltage Heater Always Input Voltage

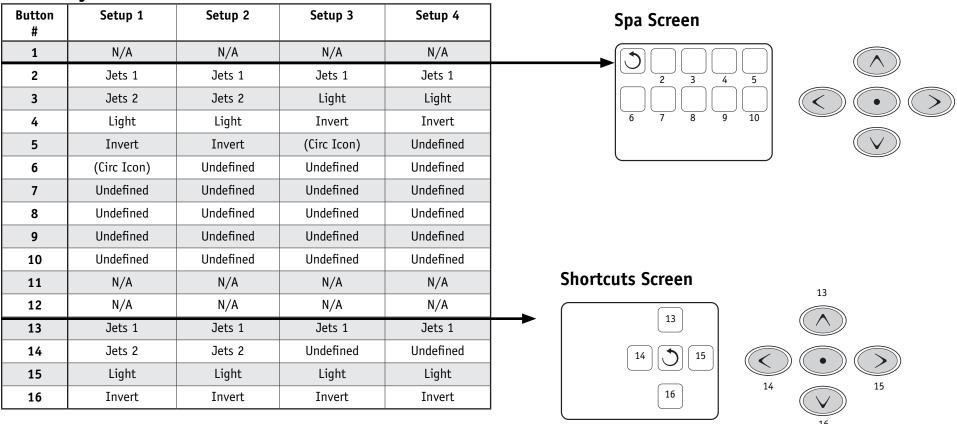
Safety Suction Disabled

Menu Style Standard Menus when DIP switch A7 is OFF.

Simplified Menus when DIP switch A7 is ON..

## **TP900 Panel Configuration**

#### **Button Layout Table**



A Circ Icon will appear when a Circ Pump is configured



# **TP800 Panel Configuration**

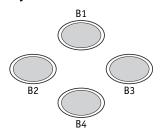
## **Button Layout Table**

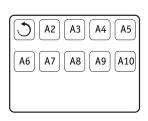
Feature #			Setup 4	
A1	N/A	N/A	N/A	N/A
A2	Jets 1	Jets 1	Jets 1	Jets 1
А3	Jets 2	Jets 2	Light 1	Light 1
A4	Light 1	Light 1	Invert	Invert
A5	Invert	Invert	(Circ Icon)	Undefined
A6	(Circ Icon)	Undefined	Undefined	Undefined
A7	Undefined	Undefined	Undefined	Undefined
A8	Undefined	Undefined	Undefined	Undefined
A9	Undefined	Undefined	Undefined	Undefined
A10	Undefined	Undefined	Undefined	Undefined
A11	N/A	N/A	N/A	N/A
A12	N/A	N/A	N/A	N/A
A13	Undefined	Undefined	Undefined	Undefined
A14	Undefined	Undefined	Undefined	Undefined
A15	Undefined	Undefined	Undefined	Undefined
A16	Undefined	Undefined	Undefined	Undefined
B1	Jets 1	Jets 1	Jets 1	Jets 1
B2	Jets 2	Jets 2	Undefined	Undefined
В3	Undefined	Undefined	Undefined	Undefined
B4	Light 1	Light 1	Light 1	Light 1

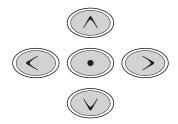
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## **TP800 Panel Configuration**

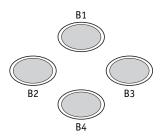
#### **Spa Screen**

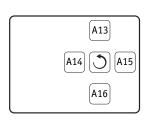


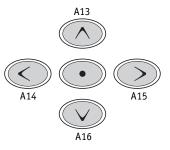




#### **Shortcuts Screen**







**Note:** Buttons 11 and 12 are not used in this configuration.

Button 1 is fixed.



# **TP600 Panel Configuration**

## **Button Layout Table**

Button #	Setups 1 & 2	Setups 3 & 4			
1	Jets 1	Jets 1			
2	Jets 2	Undefined			
3	Invert	Invert			
4	Up	Up			
5	Light 1	Light 1			
6	Down	Down			
LED 1	Jets 1	Jets 1			
LED 2	Jets 2	Undefined			
LED 3	Light 1	Light 1			
LED 4	Heat On	Heat On			



#### **TP600**

55676-XX

No Overlay

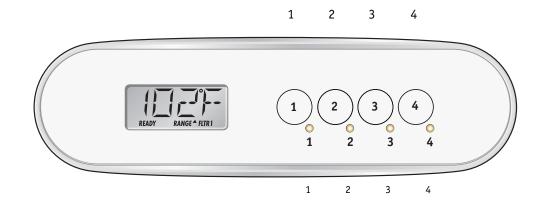


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## **TP400 Panel Configuration**

#### **Button Layout Table for TP400T**

Button #	Setups 1 & 2	Setups 3 & 4
1	Temperature	Temperature
2	Jets 1	Jets 1
3	Light 1	Light 1
4	Jets 2	Undefined
LED 1	Heater ON	Heater ON
LED 2	Jets 1 ON	Jets 1 ON
LED 3	Light ON	Light ON
LED 4	Jets 2	Undefined



#### **Button Layout Table for TP400W**

Button #	All Setups
1	Up
2	Down
3	Light 1
4	Jets 1
LED 1	Heater ON
LED 2	Undefined
LED 3	Light ON
LED 4	Jets 1 ON

TP400W is supported in Setups 3 & 4 only.

#### TP400W US

50384-XX

Includes overlay PN 12510.

#### TP400T US

50380-XX

Includes overlay PN 12511.

