BP16P12C Tech Sheet

Balboa Water Group

System Part Numbers: 56326 3kW 800 Incoloy Element

56327 3kW Titanium Element

Compatible Plumbing Kits (Coupling nuts and seals included)

55911 2" Tailpieces (2-Speed Pump 1) 55914 1.5" Tailpieces (2-Speed Pump 1)

55912 1" Tailpiece Inserts (Circ)

One Direct Circ Pump Coupling and one 1" Tailpiece Insert

CE System Model: BP16-BP16P12C-RCA-3.0KW

Software ID: M100_205 V6

Software Version: 6.0

Hex File: BP1600_6.0_BP16P12C.hex

Configuration Signature: 4BBDA9B3

Eng. Project: 3882

Base PCBs / PCBA's:

Power Board: 22117_B / 56329 Logic Board: 22121_E / 56328

Control Panels:

TP600CE 50014-01
TP600 (non-CE) should not be used
Software Version 2.3 and later

TP400T 50260

Software Version 2.4 and later

TP400W 50259

Software Version 2.4 and later



User Interface and Programming Guide:

http://service.balboa-instruments.com/zz40940_download.zip



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,

System Revision History

Part #	EPN	Date	Originator	Changes Made
56326	3882	08-16-12	Balboa	New Revolution system with 2-Speed Pump 1 plus Circ., plus other set-
and				ups that do not require Pump 2 or Blower.
56327				



Plumbing Fittings





2" Tailpiece kit PN 55911.

Standard 2" sockets to glue up to 2" PVC pipe.





Not Immediately Available.

1.5" Tailpiece kit PN 55914.

1.5" sockets to glue up to 1.5" PVC pipe with the I.D.

Be sure to orient the fittings so that the insert is at the 12:00 position to prevent trapped air.





1" Circ Pump Insert kit PN 55912.

1" barb fittings for use with 1" tubing.

Be sure to orient the fittings so that the insert is at the 12:00 position to prevent trapped air.





Not Immediately Available.

1" Circ Pump Insert kit PN 55913.

One fitting for direct coupling to the threaded suction of an appropriately-sized circ pump. A 1" barb fitting for use with 1" tubing is used on the other end of the heater.

Be sure to orient the fittings so that the insert is at the 12:00 position to prevent trapped air.



Setup 1-16 (As Manufactured)

Power Requirements:

Single Service [3 wires (line, neutral, ground)] 230VAC, 50Hz, 1b, 16A, (Circuit Breaker rating = 20A max.)

System Ouputs:

Pump 1 230VAC 2-Speed 12A max 30-minute timer for Low Speed, 15 Minutes for High Speed

Circ Pump 230VAC 1-Speed 2A max Programmable Filtration Cycles + Polling

This is the heater pump

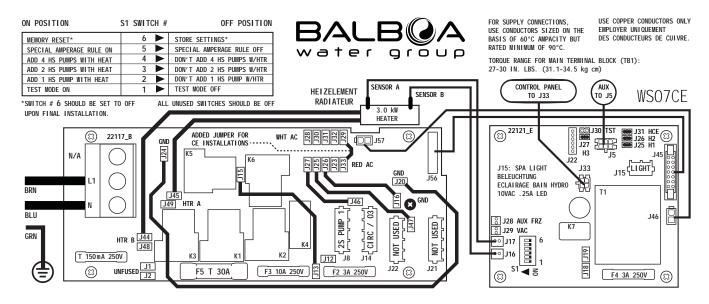
Must deliver a minimum of 20 GPM through heater

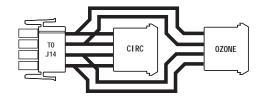
Ozone 230VAC .5A max Uses the same relay as the Circ Pump

Spa Light 10VAC On/Off 1A max 4-Hour timer.

Heater 3kW @ 240VAC

Wiring Diagram and Settings





Output Splitter Part Number 22934 must be used.



Refer to Page 3 to choose a suitable Plumbing Kit.

Setup 1-32

Power Requirements:

Single Service [3 wires (line, neutral, ground)] 230VAC, 50Hz, 1b, 32A, (Circuit Breaker rating = 40A max.)

System Ouputs:

Pump 1 230VAC 2-Speed 12A max 30-minute timer for Low Speed, 15 Minutes for High Speed

Circ Pump 230VAC 1-Speed 2A max Programmable Filtration Cycles + Polling

This is the heater pump

Must deliver a minimum of 20 GPM through heater

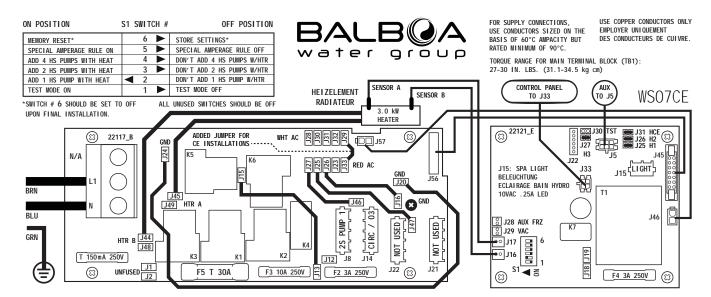
Ozone 230VAC .5A max Uses the same relay as the Circ Pump

Spa Light 10VAC On/Off 1A max 4-Hour timer.

Heater 3kW @ 240VAC

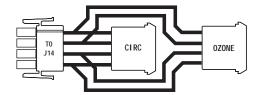
Misc. J2 & J32 230VAC 3A max Hot output (Stereo). Fused equipment or in-line fuse required.

Wiring Diagram and Settings



Software Configuration Changes based on Default

Add 1 High Speed Pump with Heat DIP Switch 2 OFF DIP Switch 2 ON



Output Splitter Part Number 22934 must be used.



Refer to Page 3 to choose a suitable Plumbing Kit.

Setup 2-16

Power Requirements:

Single Service [3 wires (line, neutral, ground)] 230VAC, 50Hz, 1b, 16A, (Circuit Breaker rating = 20A max.)

System Ouputs:

Pump 1 230VAC 2-Speed 12A max 30-minute timer for Low Speed, 15 Minutes for High Speed

This is the heater pump

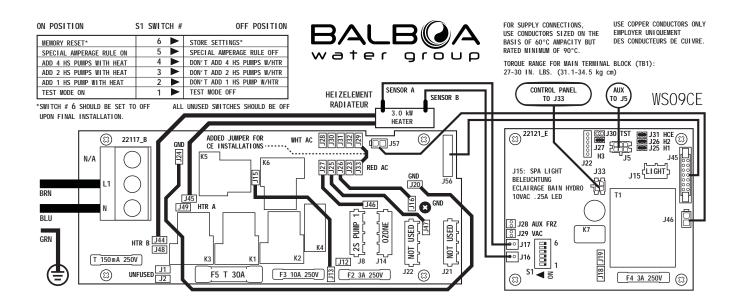
Must deliver a minimum of 20 GPM through heater

Ozone 230VAC .5A max

Spa Light 10VAC On/Off 1A max 4-Hour timer.

Heater 3kW @ 240VAC

Wiring Diagram and Settings



Software Configuration Changes based on Default Feature Orig. Setup 1 Changes to

J14 Ozone and Circ* Ozone Only

*Output Splitter 22934 is not needed in this configuration.



Refer to Page 3 to choose a suitable Plumbing Kit.

Setup 2-32

Power Requirements:

Single Service [3 wires (line, neutral, ground)] 230VAC, 50Hz, 1b, 16A, (Circuit Breaker rating = 20A max.)

System Ouputs:

Pump 1 230VAC 2-Speed 12A max 30-minute timer for Low Speed, 15 Minutes for High Speed

This is the heater pump

Must deliver a minimum of 20 GPM through heater

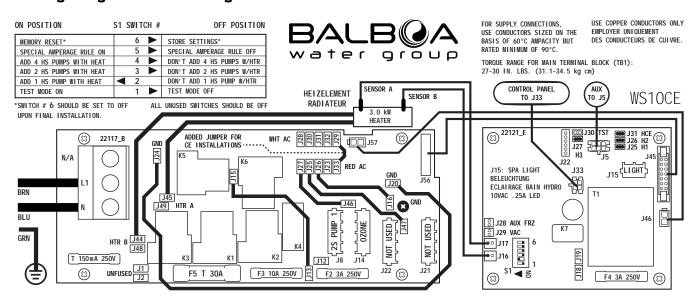
Ozone 230VAC .5A max

Spa Light 10VAC On/Off 1A max 4-Hour timer.

Heater 3kW @ 240VAC

Misc. J2 & J32 230VAC 3A max Hot output (Stereo). Fused equipment or in-line fuse required.

Wiring Diagram and Settings



Software Configuration Changes based on Default Feature Orig. Setup 1 Changes to

DIP Switch Option

Add 1 High Speed Pump with Heat DIP Switch 2 OFF DIP Switch 2 ON

BALB@A

Refer to Page 3 to choose a suitable Plumbing Kit.

^{*}Output Splitter 22934 is not needed in this configuration.

Setup 3-16

Power Requirements:

Single Service [3 wires (line, neutral, ground)] 230VAC, 50Hz, 1þ, 16A, (Circuit Breaker rating = 20A max.)

System Ouputs:

Pump 1 230VAC 1-Speed 12A max 15-minute timer

Circ Pump 230VAC 1-Speed 2A max Programmable Filtration Cycles + Polling

This is the heater pump

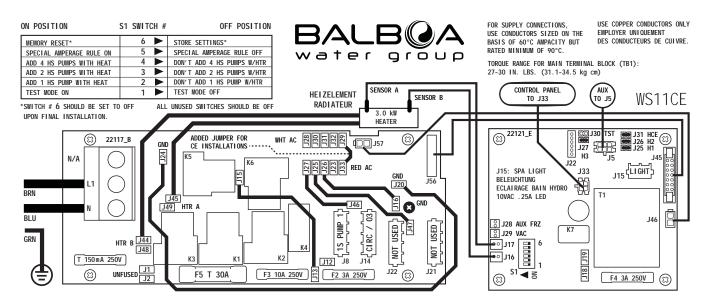
Must deliver a minimum of 20 GPM through heater

Ozone 230VAC .5A max Uses the same relay as the Circ Pump

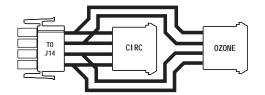
Spa Light 10VAC On/Off 1A max 4-Hour timer.

Heater 3kW @ 240VAC

Wiring Diagram and Settings



Software Configuration Changes based on Default Feature Orig. Setup 1 Changes to



Output Splitter Part Number 22934 must be used.



Refer to Page 3 to choose a suitable Plumbing Kit.

Blue indicates changes from the original Setup 1 default

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. All material copyright of Balboa Water Group.

Power Requirements:

Single Service [3 wires (line, neutral, ground)] 230VAC, 50Hz, 1b, 16A, (Circuit Breaker rating = 20A max.)

System Ouputs:

Pump 1 230VAC 1-Speed 12A max 15-minute timer

Circ Pump 230VAC 1-Speed 2A max Programmable Filtration Cycles + Polling

This is the heater pump

Must deliver a minimum of 20 GPM through heater

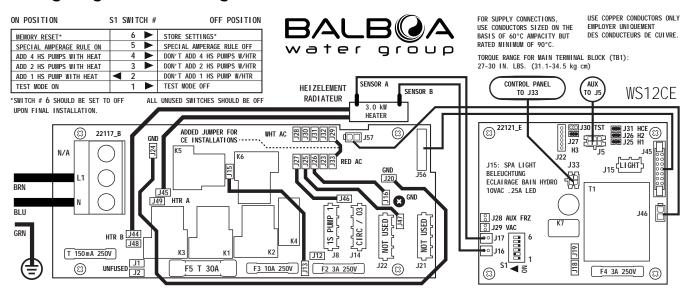
Ozone 230VAC .5A max Uses the same relay as the Circ Pump

Spa Light 10VAC On/Off 1A max 4-Hour timer.

Heater 3kW @ 240VAC

Misc. J2 & J32 230VAC 3A max Hot output (Stereo). Fused equipment or in-line fuse required.

Wiring Diagram and Settings



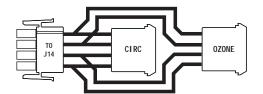
Software Configuration Changes based on Default Feature Orig. Setup 1 Changes to

 Pump 1
 2-Speed
 1-Speed

 J2 & J32
 Hot Output
 Useable

DIP Switch Option

Add 1 High Speed Pump with Heat DIP Switch 2 OFF DIP Switch 2 ON



Output Splitter Part Number 22934 must be used.



Refer to Page 3 to choose a suitable Plumbing Kit.

Blue indicates changes from the original Setup 1 default

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. All material copyright of Balboa Water Group.

Setup Changes with DIP Switch 1 ON

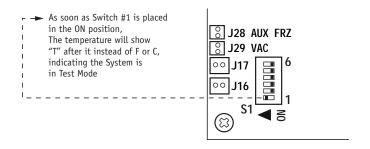
Read and understand these instructions before beginning this process.

Know the Setup Number you want before you power up the spa and wait to power up the spa until you're ready to change the Setup Number.

The system must be in Test Mode, so move Switch 1 to the ON position. The Test Menu will then be available.

Power up the spa, and press any button once to Link the panel. (Note: Switch 1 can be moved to the ON position immediately after power-up, if preferred - Danger! High Voltage will be present!)

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.)



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

Move DIP Switch 1 (on S1 on the Logic circuit board) to ON.

The system will enter Test Mode.

Moving DIP Switch 1 to OFF will exit Test Mode.



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.



Setup Changes – Continued

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

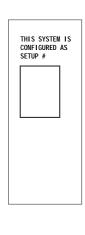
Immediately after exiting Priming Mode, press this sequence of buttons: Warm*, Light, Warm, Warm, Warm, Warm. Continue to press Warm until the diplay shows the Setup Number (S-01, S-02, etc.) you want to switch to. When the correct setup number is showing, press Light once, and the system will reset,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

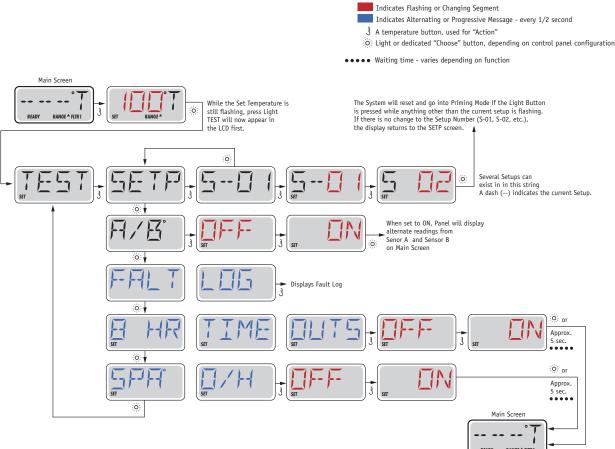
Key

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.





*If the Control Panel does not have a Warm (Up) button, but rather a single Temp button, use the Temp button in place of the Warm button in the instruction above. (The flow chart assumes a single Temperature Button.)



IT Electrical System (No Neutral)

The wiring diagram in the system show connections for TN and TT electrical services (Line, Neutral, Ground).

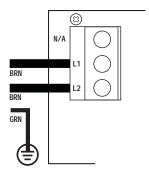
IT Power Requirements:

Single Service [3 wires (line, line, ground)] 230VAC, 50Hz, 1b, 16A/32A, (Circuit Breaker rating = 20A/40A max.)

Protective Earth Wire (Green/Yellow) must be connected to system ground terminal as marked.

All equipment (pumps, blower, and heater) runs on service line L1 with L2 acting as the return - 230VAC.

Set the DIP switches according to the wiring diagram so that total system current draw never exceeds the rated service input when using a particular setup.

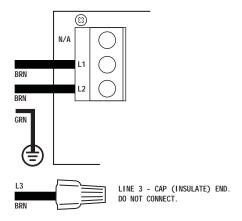


Three Service [4 wires (line, line, line, ground)] 230VAC, 50Hz, 1b, 16A/32A, (Circuit Breaker rating = 20A/40A max.)

Protective Earth Wire (Green/Yellow) must be connected to system ground terminal as marked.

All equipment (pumps, blower, and heater) runs on service line L1 with L2 acting as the return - 230VAC.

Set the DIP switches according to the wiring diagram so that total system current draw never exceeds the rated service input when using a particular setup.





Refer to Page 3 to choose a suitable Plumbing Kit.

General Features

Ozone Suppression

Feature	Default
Pump 1 in Filter Cycle (Circ Only)	No
Pump 1 Low Timer	30 Minutes
General Pump Timer	15 Minutes
Blower Timer	15 Minutes
Mister Timer (N/A)	15 Minutes
Light Timer	240 Minutes
Circ	Like P1 Low
Cleanup Cycle	30 Minutes
Cleaup as Preference setting	Yes
Ozone	Always

Pump Purge 60 Seconds
Blower Purge 30 Seconds
Mister Purge (N/A) 5 Seconds

OFF



Temperature Features

Feature Default

Temperature Display

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	<i>52</i>	54	55	<i>57</i>	59	61	63	64	66	68	70	72
°C	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	_
°F	73	75	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°F
Hi-Range Default Temp*	100°F
Lo-Range Min. Set Temp	50°F
Lo-Range Max. Set Temp	99°F
Lo-Range Default Temp*	70°F
Freeze Threshold	44°F

Temp Lock Type Temp + Settings

Time Features

Feature Default

Time Format* 24 Hour

Filter 1 Start Hour* 8:00 PM (20:00)

Filter 1 Duration* 2 Hours

Filter Cycle 2 Default* OFF

Filter 2 Start Hour* 8:00 AM (08:00)
Filter 2 Duration* 15 Minutes

Light Cycle Disabled
Light Cycle Default*

OFF

Light Cycle Start Hour* 9:00 PM (21:00)
Light Cycle Duration* 15 Minutes



^{*}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	65 Days
Drain Water	100 Days
Change Cartridge	OFF
Clean Cover	<i>OFF</i>
Treat Wood	<i>OFF</i>
Change Filter	365 Days

Special Features

Feature Default

Special Amperage Rule A (DIP SW 5 OFF) No Limitation

Special Amperage Rule B (DIP SW 5 ON) 1 High-Speed Pump**

Drain Mode Disabled
Demo Mode Disabled
Automatic GFCI Test Disabled

Ozone Slaved to Heater Pump Yes in Setups 1 & 3

No in Setup 2

This setting will not allow both Pump 1 High and Pump 2 to run at the same time.



^{*} Editable by end-user

^{**} Special Amperage Rule B is (DIP Switch 5 ON) is only used with Setup 1-16 (Page 4).

TP400 Control Panel FeaturesFeature TP400T

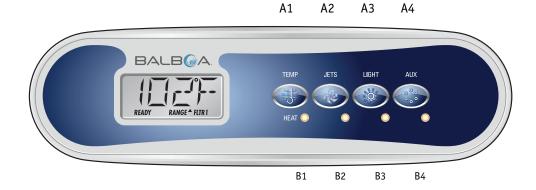
Button 1	Temperature	Up
Button 2	Jets 1	Down
Button 3	Light 1	Light 1
Button 4	Unused	Jets 1

LED B1	Heat ON	Heat ON
LED B2	Jets 1	Unused
LED B3	Light 1	Light 1
LED B4	Unused	Jets 1

TP400T

50260

Includes Overlay PN 12511



TP400W

TP400W

50260

Includes Overlay PN 12510



Download the User Interface and Programming Guide here:

http://service.balboa-instruments.com/zz40940_download.zip

Blue Indicates New Custom Configuration Default (Setup 1)



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. All material copyright of Balboa Water Group.

TP600 Control Panel Features Default

reature	Delaat
Button 1	Jets 1
Button 2	Unused
Button 3	Flip
Button 4	Up
Button 5	Light 1
Button 6	Down

LED 1	Jets 1
LED 2	Unused
LED 3	Light 1
LED 4	Heat ON

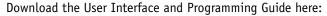
TP600CE

50014-01



Includes Overlay PN 12101 TP600 (non-CE) should not be used





http://service.balboa-instruments.com/zz40940_download.zip

Blue Indicates New Custom Configuration Default (Setup 1)



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. All material copyright of Balboa Water Group. Template 40941_J 04-02-10 56326/56327_97_A 08-16-12 17

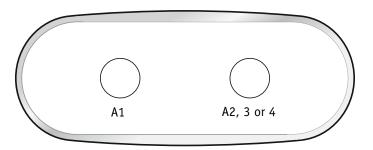
Auxilliary Panel Features

Feature	Default
Aux Button A1	Jets 1
Aux Button A2	Jets 2
Aux Button A3	Unused
Aux Button A4	Light

AX10 A1	Jets 1	52683-01
AX10 A2	N/A	
AX10 A3	N/A	
AX10 A4	Light	52766



AX20 A1A2	No O/L	52800
AX20 A1A3	No O/L	52801
AX20 A1A4	No O/L	52802



AX40 No 0/L 52799

