

# EL1001 Mach 3 Hot Sheet

## Balboa Instruments System PN 54388-01

System Model # E1P-EL1001M3-DCAH

Software Version # 26

EPN # 2009

Base PCBA - PN 54389-01

PCB EL1000 – PN 22952 Rev B or C

Base Panels

ML400 – PN 52684



# Basic System Features and Functions

## Power Requirements

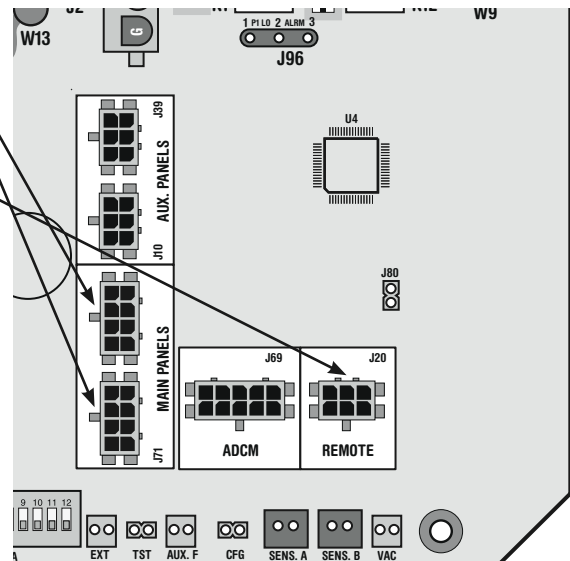
- 240VAC, 60Hz, 40A, Class A GFCI-protected service (Circuit Breaker rating = 50A max.)
- 4 wires (hot, hot, neutral, ground)

## System Outputs (As Configured)

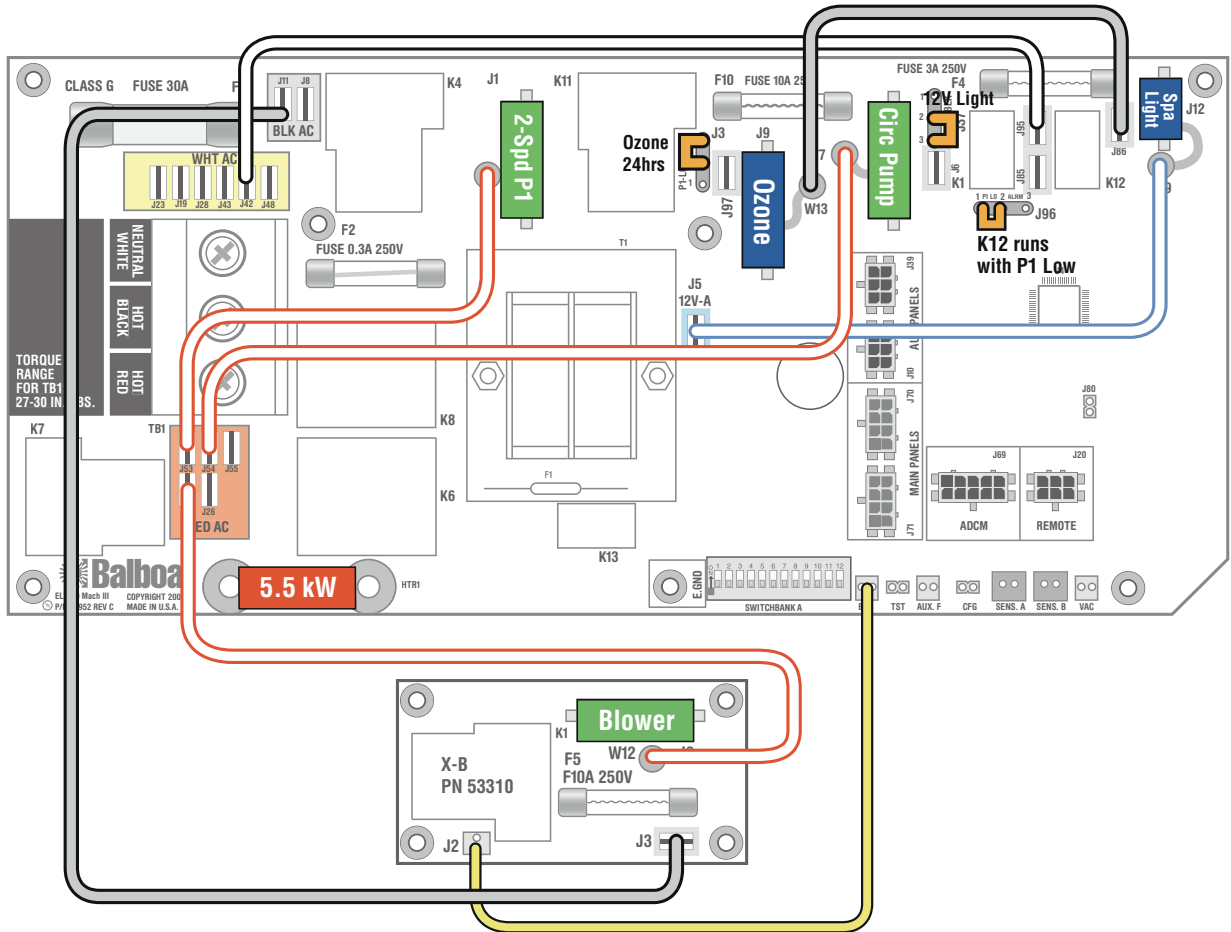
- 240V Pump 1, 2-Speed
- 240V Circ Pump
- 240V Blower
- 120V Ozone
- 12V Spa Light
- 240V 5.5kW Heater

## Additional Options

- Full Feature Dolphin Remote and Spa-only Dolphin Remote
- Spa Monitor  
Connects to Main Panel terminal J70 or J71
- IR or RF Dolphin Receiver Module  
Connects to Remote terminal J20
- Ozone Generator  
Connects to terminal J9
- MoodEFX Lighting  
Connects to Spa Light terminal J12
- FiberEFX Lighting  
Connects to Spa Light terminal J12
- Stereo System  
Connects to A.V. terminal J2



# Wiring Configuration



## Wiring Color Key

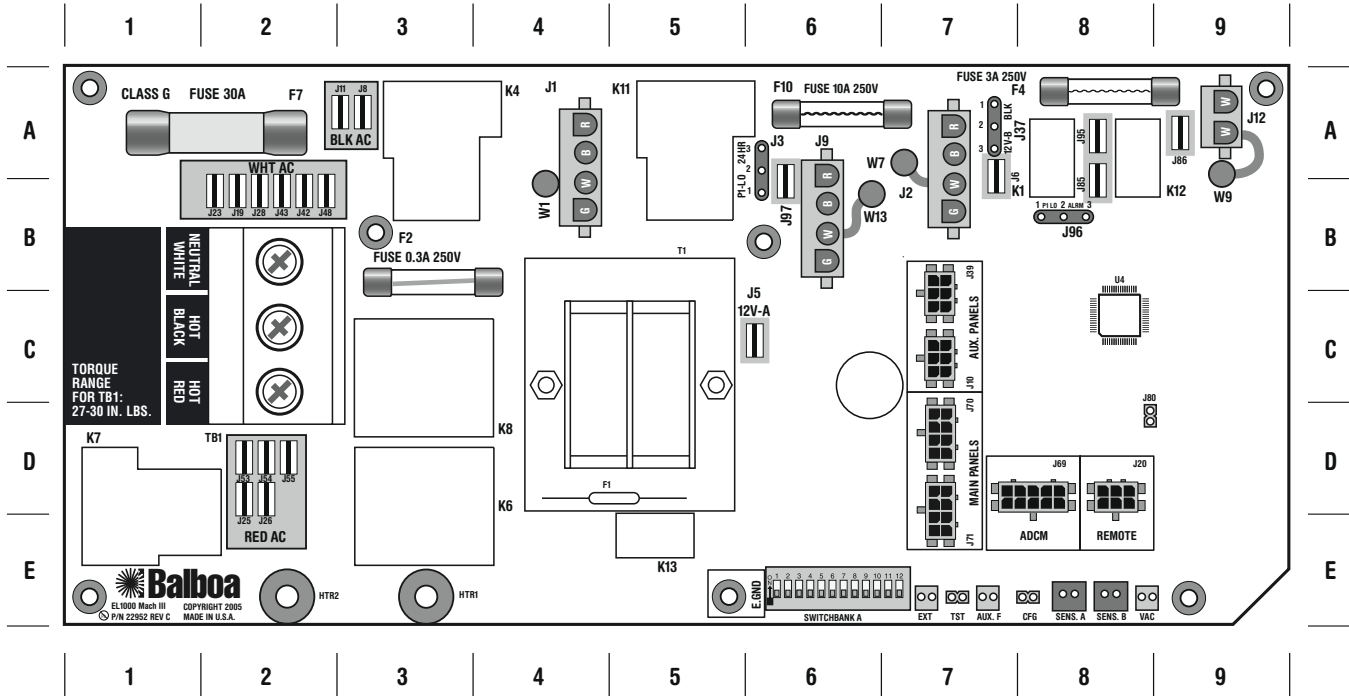
- 120 Volt Connections
- 240 Volt Connections
- Black AC Jumpers
- 12 Volt Connections
- Relay Control Wires

## Connector Key

- Typically Line voltage
  - Typically Line voltage for 2-speed pumps
  - Neutral (Common)
  - Ground
- Note flat sides in connector

PCB Revision	History
B or C	Production Release

# Configuration Options

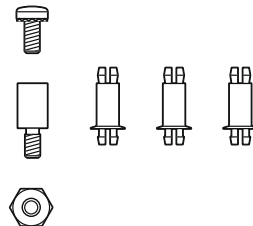


## Output Features

- J1 + W1 – 2-Speed Pump 1
- J2 + W7 – Audio/Visual
- J9 + W13 – Ozone (Separate Relay 120V or 240V)
- J12 + W9 – Spa Light (12V or 120V) Check J37 Setting

## Quadrant

- 4-A
- 7-C
- 6-B
- 9-A

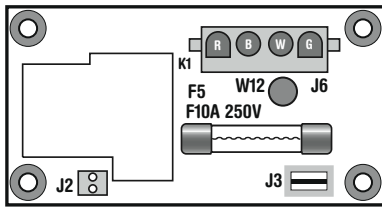


### X-Mount P

**PN 53933**

Used for mounting any Expander Board in a plastic enclosure. Standoffs attach to heater mounting bracket.

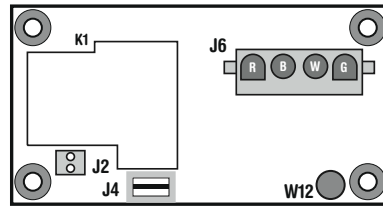
# Expander Options



**X-B** **PN 53310**

Used for a Blower output ONLY.

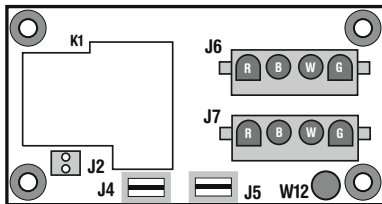
- Cannot be used with X-P



**X-P** **PN 53544**

Used for a 1-speed Pump 2 output ONLY.

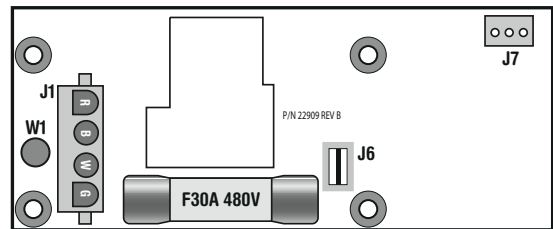
- Cannot be used with X-B



**X-03** **PN 53426**

Used for running Ozone and/or Circ Pump at voltage independent of Pump 1.

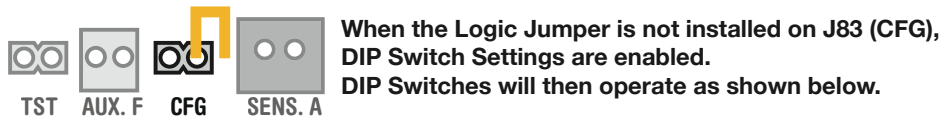
- Requires Adapter Cable PN 25339 to connect J4 on X-03 to J9 pin 1 (6-A) on main PCBA.
- Circ Pump and Ozone must be same voltage.



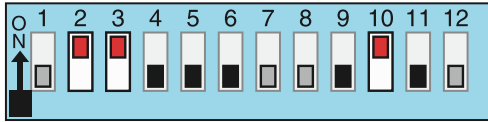
**X-P231** **PN 53681**

Can replace the X-P in cases where branch circuit protection is needed for high amperage devices that would over-burden power input fuse F7 (2-A) on the main PCBA. This allows J6 on the X-P231 to connect directly to Black AC (3-A) on the main EL1000 PCBA.

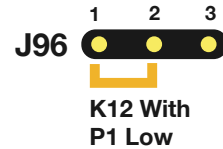
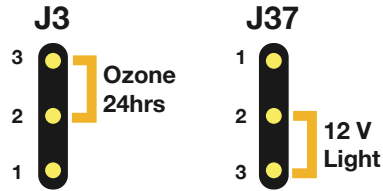
# DIP Switches and Jumpers



## Switchbank A



- |                               |                                     |
|-------------------------------|-------------------------------------|
| <b>A1, Test Mode OFF</b>      | <b>A7, Cleanup Cycles OFF</b>       |
| <b>A2, High Amp</b>           | <b>A8, Pump 2 Disabled</b>          |
| <b>A3, Filter by Duration</b> | <b>A9, No Circ Pump</b>             |
| <b>A4, 12 Hr Time</b>         | <b>A10, Blower Enabled (A8 Off)</b> |
| <b>A5, Degrees F</b>          | <b>A11, Do Not Use</b>              |
| <b>A6, Short Timeouts</b>     | <b>A12, Memory Retained</b>         |



### DIP Switchbank A Key

- A 1 ..... Test Mode (normally Off)
- A 2 ..... In "ON" position, heater can run while any/all high-speed pumps or blowers are running. (High amperage)  
..... In "OFF" position, heater is disabled while any high-speed pump or blower is running. (Low amperage)
- A 3 ..... In "ON" position, filter cycles are programmed by duration  
..... In "OFF" position, filter cycles are programmed to start and end times
- A 4 ..... In "ON" position, displays time in 24 hours (military time)  
..... In "OFF" position, displays 12 hour time
- A 5 ..... In "ON" position, displays temperature in Celsius  
..... In "OFF" position, displays temperature in Fahrenheit
- A 6 ..... In "ON" position, Equipment timeout 30 minutes (4 hours for Pump 1 Low)  
..... In "OFF" position, Equipment timeout 15 minutes (2 hours for Pump 1 Low)
- A 7 ..... In "ON" position, Cleanup Cycle – 30 minutes after spa use/timeout, Pump 1 Low & Ozone run for 1 hour.  
..... In "OFF" position, no Cleanup Cycle
- A 8 ..... In "ON" position, enables Pump 2 (A10 must be Off)  
..... In "OFF" position, disables Pump 2
- A 9 ..... In "ON" position, DO NOT USE. \*See note below.  
..... In "OFF" position, no Circ Pump
- A 10 ..... In "ON" position, Blower enable when Pump 2 is disabled (A8 must be Off)  
..... In "OFF" position, Blower disabled
- A 11 ..... In "ON" position, DO NOT USE. \*See note below.  
..... In "OFF" position, Pump 1 is two-speed
- A 12 ..... Persistent memory reset (normally off) (used when spa is powering up)
- \* Note: For systems with Circ Pump use software configuration settings and X-03 expansion board.

- J3** Jumper on Pin 1 and 2 will power J9 (Ozone) with Pump 1 Low.  
Jumper on Pin 2 and 3 will power J9 to run 24 hours.
- J37** Jumper on Pin 1 and 2 will power one leg of J12 (Spa Light) at 120/240 Volts AC.  
Jumper on Pin 2 and 3 will power one leg of J12 (Spa Light) at 12 Volts AC.  
Note: W9 controls voltage on the other leg of J12 and must be set for the same voltage.
- J96** Jumper on Pin 1 and 2 will operate relay K12 with Pump 1 Low.  
Jumper on Pin 2 and 3 will operate relay K12 independently.

# Ozone Connections

## Ozone Connection Voltage:

Ozone Connection #1 - Using the J9 On-board Connector

- The EL1000 Circuit Board to deliver the desired voltage to the on-board connector (J9). Connect the W13 wire to J86 AND the wire from J95 to either White AC (120V) or Red AC (240V) to change the voltage setting if required.
- J3 should be set on pins 1 and 2 to operate the Ozone Generator with Pump 1 Low.

Ozone Connection #2 - Using X-03 Expansion Board

- An Ozone generator connected to the X-03 expansion board **MUST** be the same voltage as the circ pump connected.
- J3 should be set on pins 2 and 3 to provide continuous fused power to the X-03 expansion board from the J9 connector on the main PCBA.

## Balboa Ozone Generator:

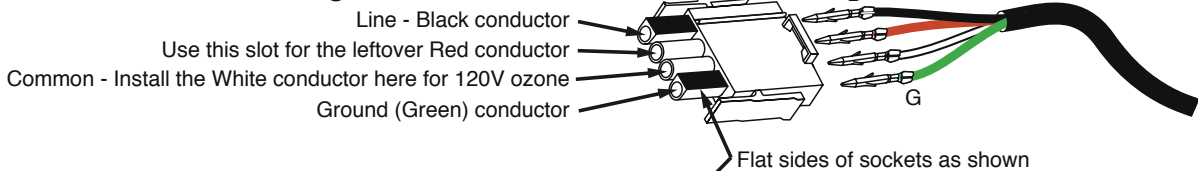
The pin next to ground determines voltage on these connectors.

If the board is set up to operate a 120V ozone generator, the connector on the ozone generator is likely to be configured correctly, but should be compared to the illustration below.

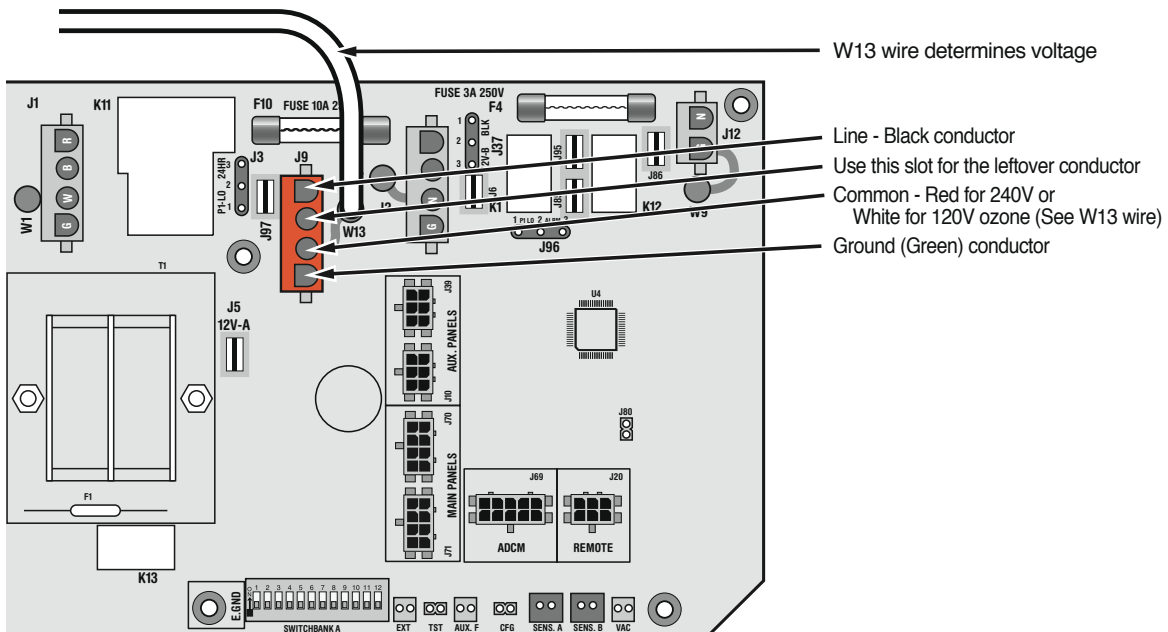
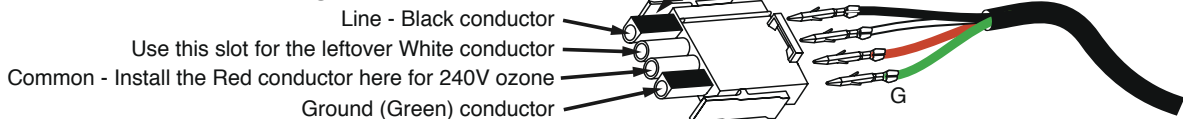
If a 240V ozone generator is required, be sure the red wire in the ozone cord is positioned in the connector next to the green ground wire as described below.

*Note: A special tool is required to remove the pins from the connector body once they are snapped in place. Check with your Balboa Account Manager for information on purchasing a pin-removal tool.*

### Balboa Ozone connector configuration for 120V 60Hz



### Balboa Ozone connector configuration for 240V 60Hz



# Panel Configurations



ML400

PN 52684 with Overlay PN 11345

- Connects to Main Panel terminal J70, J71, J72, or J73