

Brew-In-A-Bag Control Panel (BB-100)

(v1.0, March 2016)

1. Introduction

Thank you for purchasing the Auber BIAB Control Panel. We sincerely appreciate your trust in our product. Before you connect the power or operate this control panel, a few minutes of your time in reading through this manual is very important. This manual will help you follow all the safety precautions and operate the control panel safely. The BB-100 control panel is fairly easy to operate, but the system involves high wattage appliances/loads, so we strongly urge you to read through the manual carefully.

The BB-100 control panel is a full-function control panel designed for home brewers using brew-in-a-bag method and use electric heating element as the heat source. It features with Auber's PID controller (SYL-2352), brew timer (JSL-73), liquid tight PT100 probe, and the safety-start interlock system. It allows the brewer to precisely control the mashing temperature, adjust the boiling level, fully control each connected device/load, and keep a close track the time of each events during brewing. With this BB100 control panel, brewers will be able to achieve consistent and precise temperature control on each batch of brew.



SAFETY WARNINGS

- At receiving this control panel, please visually inspect whether there is any damage on the exterior components or on the enclosure itself. Please also unlock the door of the control panel and visually inspect whether there is any loose or fall off parts or wires. If any exterior damage, loose wires, or falling part is found, please contact Auber Instruments immediately.
- This control panel is designed for inside, dry use only. DO NOT expose it to excessive moisture.
- This control panel is designed only to be used with devices that have limited power and their own thermal cut off protection, such as a thermostat or thermal fuse in case of control panel failure.
- This control panel should be connected to a subpanel with 30 A, 240 Vac circuit breaker. It should be used in conjunction with a Ground Fault Circuit Interrupter (GFCI).
- The maximum electric current that this controller can handle is 30 Amps at 240 Vac in US and Canada, this limits the heater power to 7400 W.
- This control panel is designed to use with devices that meet the recommended ratings or specifications, and are not exceeding the maximum power ratings. Using it with un-recommended devices can be dangerous and cause fire.
- Always place the sensor in the object to be controlled when the controller is on. Leaving the sensor outside

of the object to be controlled will create an open-loop operation. When the sensor is left outside the controller will assume the object is still cold and keep on sending full power to the heater, which can result in damages to your appliance as well as to the controller, and even cause a fire.

- DO NOT leave this control panel unattended. DO NOT plug/unplug heater when the control panel is energized.
- Do not place any objects on the top of the heat sink which is used to dissipate excess heat during its operation.
- If an abnormal display or noise is observed, turn the controller off, unplug the power cord and contact the manufacturer before using it again.
- Auber Instruments is not liable for damages caused by misuse of the controller or user error.
- Keep it away from children.
- Clean the panel only when it is cool and unplugged.

2. Specifications

Input voltage	240 Vac, 50/60 Hz
Output voltage	240 Vac for heater, 120 Vac for pump
Maximum current	30 Amps at 240 Vac.
Controller mode	PID, on/off, manual
Output switching device	Built-in optically isolated solid state relay with zero voltage crossing switching.
Sensor type	PT100 RTD probe.
Probe cable length	8 ft or 12 ft braided cable with XLR connector
Timer range	Up to 9 events with 0.1 to 99.9 hours for each step.
Temperature resolution	1°C and 0.1 °C. or 1°F
Temperature display unit	Celsius or Fahrenheit.
Temperature display range	0°C - 200°C or 32°F - 392°F.
Max. control temperature	300 °C (572 °F).
Temperature accuracy	+/- 1°C
Heater output max current	30 A at 240 Vac
Dimension (W x H x D)	12 x 10 x 8 inch (300 x 250 x 200 mm)
Weight	13.55 lb (6.14 kg).
Warranty	One (1) year for parts and labor.

Note: This controller has US input plug and output socket that meet the NEMA standard.

3. Hardware

3.1 Components

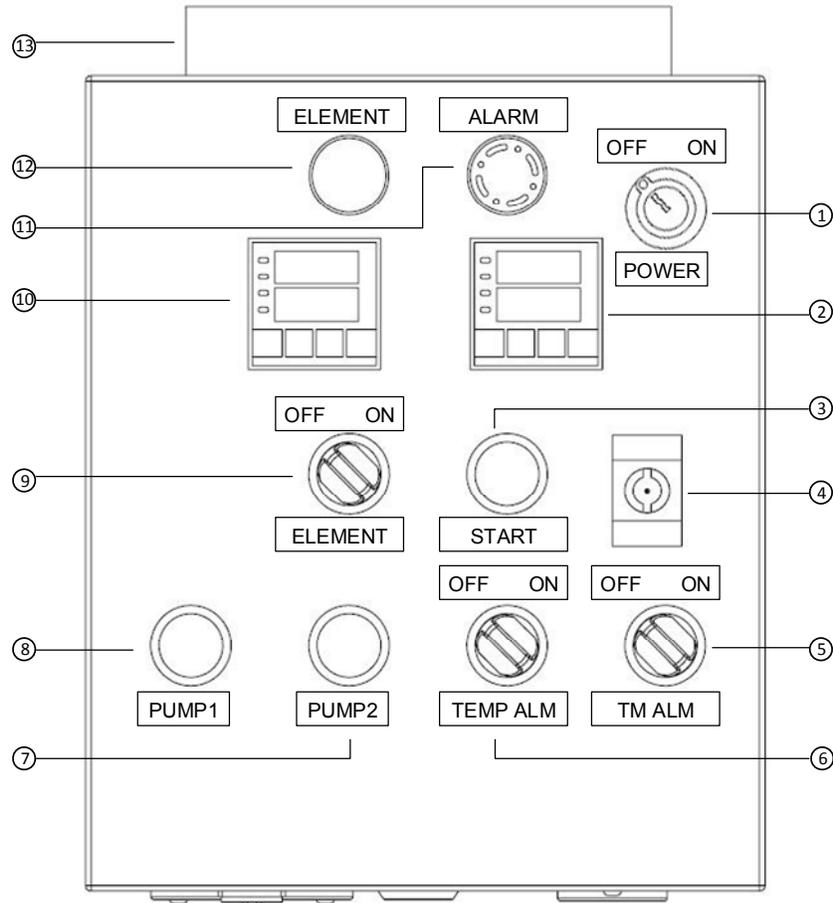


Figure 1. Front Panel.

① Power switch, a key switch turns on/off the power to the entire control panel.	⑧ Pump 1 switch (push button, maintained).
② Timer (brew timer JSL-73B).	⑨ Heating element switch (selector, maintained).
③ Start key for timer (push button, momentary).	⑩ Temperature controller (SYL-2352).
④ Door lock for the enclosure.	⑪ Flashing buzzer.
⑤ Timer alarm switch (selector, maintained).	⑫ Heating element indicator.
⑥ Temperature alarm switch (selector, maintained).	⑬ Heat sink (BHS40A).
⑦ Pump 2 switch (push button, maintained).	

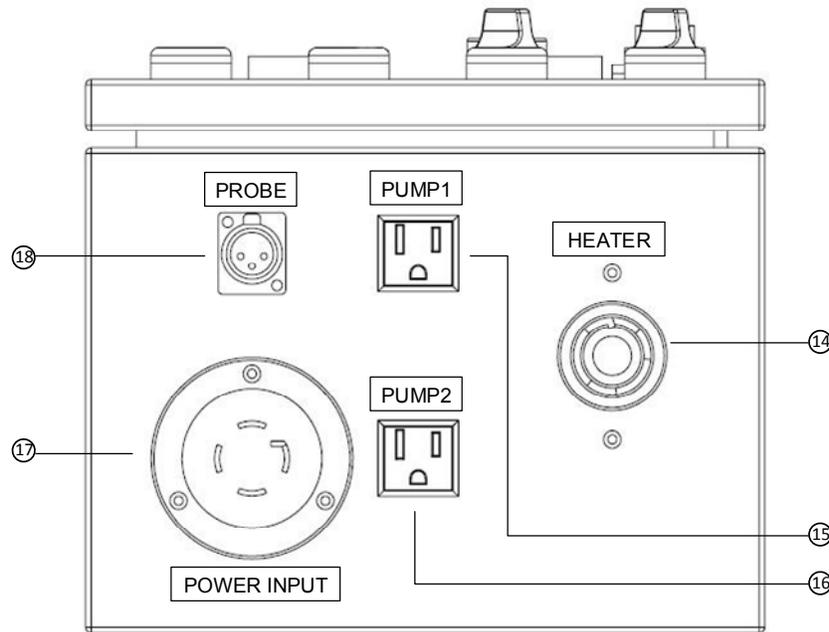


Figure 2. Bottom Panel.

⑭ Output socket (240 V, 30 A NEMA L6-30R Socket) to heater.	⑰ Power input socket (125 / 250 V, 30 A NEMA L14-30P).
⑮ Output to Pump 1.	⑱ Probe input (XLRCON female).
⑯ Output to Pump 2.	

3.2 Function of each component on the control panel

3.2.1. **Power switch.** This is the main switch that controls the power to the entire control panel. This selector switch can only be turned when the key is inserted. When it is turned to ON position, a 63 Amps double-pole contactor closes its contacts to pass the incoming power to the rest of the control panel. Turn this switch to the OFF position when you want to completely cut off the power to all components and connected loads.

3.2.2. **Brew timer (JSL-73B).** This timer is specially designed for beer brewing. It helps you keep track of the time of a series of events during beer brewing, such as mashing time, boiling time, or adding hops or other ingredients at different time point. You can program the time duration of each event through the keys on the timer. The timer's output relay is connected to the flashing buzzer (11). When the set time of an event is reached, the output relay on the timer closes and the flashing buzzer will be triggered if the Timer Alarm Switch (5) is in ON position. Turning the Timer Alarm Switch to the off position will cut of the power from the timer to the flashing buzzer.

3.2.3. **Start key.** This is a momentary push button switch. Pressing it down and release it will reset the time on the brew timer. It is connected to the RESET terminal and COM terminal of the timer.

- 3.2.4. **Door lock.** It locks/unlocks the front door of the control panel to its body. Please keep it locked when the enclosure is connected to power.
- 3.2.5. **Timer alarm switch.** This is a maintained selector switch (SW16). It connects or disconnects the flashing buzzer and the timer (2) when it is in ON or OFF position respectively. When the switch is in ON position, its indicator lights up.
- 3.2.6. **Temperature alarm switch.** This is a maintained selector switch (SW16). It connects or disconnects the flashing buzzer and the temperature controller (10) when it is in ON or OFF position respectively. When the switch is in ON position, its indicator lights up.
- 3.2.7. **Pump 2 switch.** This is a maintained push button switch. Push it down to turn on the Pump 2 (or any load) that is plugged in to Pump 2 Socket (16); the switch indicator will light up. Push it again to turn off Pump 2.
- 3.2.8. **Pump 1 switch.** This is a maintained push button switch. Push it down to turn on the Pump 1 (or any load) that is plugged in to Pump 1 Socket (15); the switch indicator will light up. Push it again to turn off Pump 1.
- 3.2.9. **Heating element switch.** This is a maintained selector switch. It controls the output signal from the temperature controller SYL-2352 (10) to the solid state relay (SSR) which connects/disconnects the power to the heating element. When this switch is in ON position, the output signal from the controller will be passed on to the SSR; when the switch is in OFF position, the output signal cannot be passed on to the SSR. *
- 3.2.10. **Temperature controller (SYL-2352).** This is the control unit that regulates the temperature in the brew kettle. It reads the signal from the temperature probe that is plugged to the probe connector (18), compares the probe temperature (PV) with the set temperature (SV), and sends control signals to a solid state relay (SSR) which actually switches the power to the heating element. The controller's alarm relays (AL1 and AL2) are connected to the flashing buzzer (11). If any of these relays are closed, the buzzer will go off. Turn the Temperature Alarm Switch (6) to OFF position if you don't want the buzzer to be triggered by temperature alarms.
- 3.2.11. **Flashing buzzer (FLBuz).** The flashing buzzer is wired to the alarm relays (AL1 and AL2) on the temperature controller and the output relay on the timer. When any of these relays is closed, the flashing buzzer will go off. The triggering signal from the temperature alarm relays can be cut off by turning the Temperature Alarm Switch to OFF position. Similarly, the triggering signal from the timer can be cut off by turning the Timer Alarm Switch to OFF position.
- 3.2.12. **Heating element indicator (IND-1).** The purpose of having this yellow indicator is to give you a visual signal of whether the heating element is getting power. It is connected to the SSR's output pins, in parallel to the heating element. When the SSR is conducting power, both the indicator and the heating element should be on; when SSR is not conducting current, then both the indicator and the heating element should be off.
- 3.2.13. **Heat sink (BHS40).** It helps dissipate the heat generated by the SSR which is attached to it from the inside of the enclosure.
- 3.2.14. **Output for heating element.** This is where the plug attached to the heating element should be plugged in. It supplies 120 Vac or 240 Vac power, in accordance with the power input voltage. Maximum current is 30 Amps. This is a NEMA L6-30R receptacle; the matching plug is NEMA L6-30P.

- 3.2.15. **Output socket for Pump 1.** Supplies 120 Vac power (maximum 10 Amps *) to drive Pump 1. The power is controlled by the Pump 1 Switch (8).
- 3.2.16. **Output socket for Pump 2.** Supplies 120 Vac power (maximum 10 Amps *) to drive Pump 2. The power is controlled by the Pump 1 Switch (9).
- 3.2.17. **Power input.** This is a L14-30P-F connector, and it accepts NEMA L14-30R connector. It is where the main power comes in (240 Vac, maximum 30 Amps). Home brewers can get 30 Amps 240 Vac power from the wall outlets reserved for dryers or ovens. These wall outlets are NEMA 14-30R receptacles, which match with NEMA-14-30P plug. The power cord that connects the 240 Vac wall outlet and this power input socket is not included**.
- 3.2.18. **Probe input.** This is a 3-pin XLR female connector wired to the temperature controller's sensor input terminals. Plug the male XLR plug from a PT100 RTD probe to this connector.

Note *: This is the maximum current can be safely handled by the switch. Please note that the combined totally current can be handled by this control panel is limited to 30 Amps.

Note **: User can purchase a dryer's power cord (usually has a NEMA L6-30P plug on one end and bare wires on the other end) and a separate NEMA L14-30R connector from hardware stores.

4. Operate BB-100 Control Panel

WARNING: At receiving this control panel, please visually inspect whether there is any damage on the exterior components or on the enclosure itself. Please also unlock the door of the control panel and visually inspect whether there is any component or wire is loose or has fallen off. If any damage, loose wire, or fallen part is found, please contact Auber Instruments immediately.

IMPORTANT: If you read this manual sequentially from the beginning, you should have done this already. If not, please go to section 3 to get familiar with the name and function of each components on this control panel.

Each component on this panel is to operate in a way that it is designed to. User should operate them according to user's particular application. This manual will only provide a basic guide on how to use it for the first time. The operations of the temperature controller (SYL-2352) and the timer (JSL-73B) are not covered in this document. Please read the manuals for SYL-2352 and JSL-73B for how to use them. Manuals can be downloaded from the product page of [SYL-2352](#) and [JSL-73B](#) on www.auberins.com.

Testing

Before connecting the probe and power to the control panel, **PLEASE MAKE SURE ALL SWITCHES FOR THE HEATER AND TWO PUMPS ARE IN OFF POSITION.** Otherwise the build-in safe-start mechanism will prevent the control panel being turned on.

- 1) Connect the XLR connector from the PT100 RTD probe to the Probe jack (18) on the bottom of the control panel.
- 2) Connect properly sized power cord from the wall outlet to the Power Input connector (17).
- 3) Turn the Power Switch (1) to ON position. The LED display on the temperature controller (10) and brew timer (2) should light up. All switches on the control panel are illuminated switches. They should light up when turned or pushed to the ON position. You can play and get familiar with the operation of each parts on the control panel.
- 4) You can test whether the Heater*, Pump 1 and Pump 2 sockets are energized with a multimeter (or a voltmeter). When using a multimeter, please use the AC Voltage measurement function. The Pump 1 and Pump 2 sockets can also be tested by a small load such a table lamp.
- 5) When you have done testing this control panel, please turn every switch to OFF position and turn off the power switch.

Getting Started

This step assumes you have done testing this control panel. The panel functions properly.

- 1) Make sure all switches are in OFF position. Connect the sensor, power cord, heating element, and pumps to the appropriate ports on the panel. Make sure there is appropriate amount of liquid in the kettle, and the tubing is securely connected.
- 2) Now you can turn on the main power on the control panel and operating your brew system.
- 3) When you are done with using this panel, turn every switches to OFF position and disconnect the main power cord from the panel.

Note *: the Heater socket can only have power when these two conditions are met: a) the heater switch is turned to ON position; b) the temperature controller's OUT light is lit.

5. *Warranty*

Auber Instruments warrants this unit to be free of defects in materials and workmanship for a period of one (1) year from the date of the original purchase when this product is utilized for normal use, subject to the following conditions, exclusions and exceptions.

If the unit malfunctions while in use under normal conditions within the warranty period, it must be returned to our office for evaluation. Auber's customer service representative will issue a Return Merchandise Authorization (RMA) number upon phone or written request. If the unit is found to be defective in materials or workmanship, Auber Instruments will repair or replace it at no charge. A dated proof of purchase may be required.

The liability of Auber Instruments is limited solely to the cost of the repair or replacement of the unit at our discretion. This warranty does not cover normal wear of parts and does not apply to any unit that has been tampered with or

used for purposes. This limited warranty does not cover damage caused by misuse, abuse, negligent handling or damage due to faulty packaging or mishandling in transit. This warranty does not cover damage or defects caused by or resulting from damages from repairs, service or alterations to the product or any of its parts which have been performed by a repairperson or facility not authorized by Auber Instruments.

This warranty is available to the original purchaser of the unit and excludes all other legal and/or conventional warranties. The responsibility of Auber Instruments, if any, is limited to the specific obligations expressly assumed by it under the terms of the limited warranty. In no event is Auber Instruments liable for incidental or consequential damages of any nature whatsoever. Some states/provinces do not permit the exclusion or limitation of incidental or consequential damages and therefore the above may not apply to you.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state or province to province.

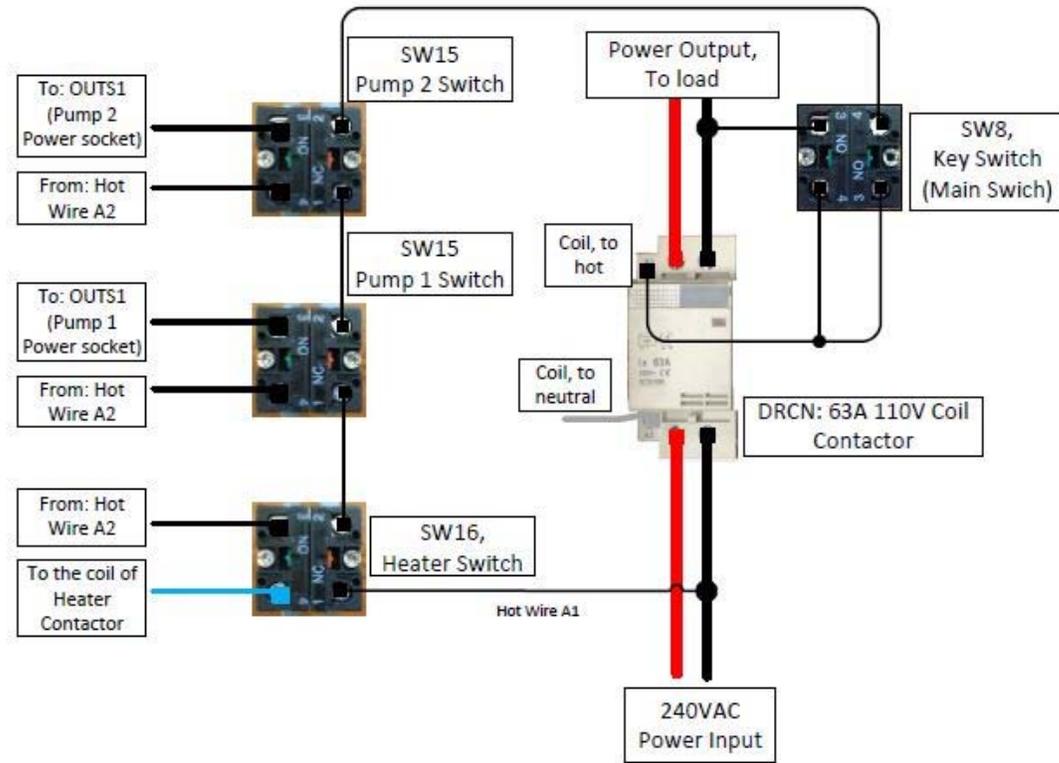
***IMPORTANT:** Carefully pack item to avoid damage in shipping. Be sure to include proof of purchase date and to attach tag to item before packing with your name, complete address and phone number with a note giving purchase information, model number and what you believe is the problem with item. We recommend you insure the package (as damage in shipping is not covered by your warranty). Mark the outside of your package "ATTENTION CUSTOMER SERVICE". We are constantly striving to improve our products and therefore the specifications contained herein are subject to change without notice.

Appendix 1 – Parts List

Part #	Description	Qty
Enclosure		
B302520	Box with BHS40A heat sink and hanger	1
Front Panel		
SYL-2352	1/16 DIN PID Temperature Controller (for SSR)	1
JSL-73B	Timer for Beer Brewing, Multi-Events	1
IND-1	LED Indicator, 22 mm, 120 V Yellow	1
FLBuz	Flashing Buzzer, 110 V AC. 22 mm	1
SW8	Key switch, main power control, 2 N.O.	1
SW16	Illuminated Short Profile 22 mm Selector maintained, 120 V, green, 2 N.O.	2
SW16	Illuminated Short Profile 22 mm Selector maintained, 120 V, Yellow, 1 N.O., 1 N.C.	1
SW15	Illuminated Short Profile 22 mm Pushbutton maintained, 120 V, blue 1 N.O., 1 N.C.	2
SW15	Illuminated Metal Push Button Switch, Momentary, 22 mm, Red, 1 N.O., 1 N.C.	1
TAG-KIT-BREW	Tag Set for Beer Brewery Panel	1
Top Panel		
BHS40A	Heat sink for 40 A SSR (comes with the enclosure).	1
Bottom Panel		
XLRCN (female conn.)	XLR Connector for RTD Cable (Female Panel Mount)	1
L14-30P-F	Leviton 125 / 250 V 30 A NEMA L14-30P Locking Flanged Inlet	1
L6-30R	Leviton 240 V 30A NEMA L6-30R Socket For Heater	1
OUTS1	120 V 15 A US Socket, Panel Mount, NEMA 5-15R	2
Inside the Enclosure		
DRTK	DIN Rail Terminal Block Kit, 30A	1
MCB	DIN Rail Mounted Circuit Breaker, 1 pole 10 A	1
MCB	DIN Rail Mounted Circuit Breaker, 2 pole, 30 A	1
DRCN	DIN Rail Mounted Contactor, 63 A, 110 V coil	2
DINR	DIN rail, 200 mm	1
MGR-1D4840	40 A SSR	1
Probe		
PT100L Series	PT100 RTD probe with 8 ft braided cable (variable models for selection)	1

Appendix 2 – Interlock Diagram

Interlock System



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