BrewCommander™ Gas

Assembly, Operation, & Maintenance

Congratulations on your purchase, and thank you for selecting the BrewCommander™ Gas Brewhouse Controller from Blichmann Engineering™. We are confident that it will provide you years of service and many gallons of outstanding beer. This manual will familiarize you with the use and assembly procedures for the product.

IMPORTANT INFORMATION

PLEASE READ AND THOROUGHLY UNDERSTAND THIS MANUAL PRIOR TO USE FOR IMPORTANT SAFETY INFORMATION!

WARNING: Sections labeled "Warning" can lead to serious injury or death if not followed. Please thoroughly read these sections and understand them completely before use. If you do not understand them or have any questions, contact your retailer or Blichmann Engineering (www.BlichmannEngineering.com) before use.

CAUTION: Sections labeled "Caution" can lead to equipment damage or unsatisfactory performance of the equipment. Please read these sections thoroughly. If you have any questions, contact your retailer or Blichmann Engineering (www.BlichmannEngineering.com) before use.

IMPORTANT: Sections labeled "Important" should specifically be followed to ensure satisfactory results with the product.

What's In the Box?

Gas Controller
aBrewCommander-G-C

Temperature Sensor Probe
BE-001500-00

Temperature Sensor Bulkhead Assembly

See Page **3** for entire list of Part #'s located under Temperature Sensor Assembly.

Entire Kit - RP-081-00

36 in. Ground Clip Wire
BE-0001541-00

Solenoid
TOP-016-01

6ft. Solenoid Cable
TOP-017-00

Ignition Electrode
TOP-020-00

3 ft. Ignition Cable
BE-001538-00

SparkBox™
aBrewCommander-SB

Adapter Fittings

BE-500008-00   BE-500009-00

OVERVIEW

The BrewCommander™ Brewhouse Controller is an accurate and intuitive complete brewhouse control for automatically ramping and maintaining the temperature of your boil kettle, mash tun, or hot liquor tank. With automated mash profile ramping, boil addition timers, pump control, delayed starting, and easy to use advanced control settings, the BrewCommander™ is clearly in a league of its own. It's a perfect plug-and-play match for controlling the power output of your HellFire™ burner or other Direct Spark Burner and can be powered from a standard 15 Amp 120V Outlet.

The Gas BrewCommander™ Brewhouse Controller is, by design, modular. A single control module can be used for controlling one vessel, or multiple temperature control modules can be combined for simultaneous control of multi-kettle systems. The controllers can operate as standalone units or can be installed on the feature-rich TOWER of POWER™ stand, which provides all of the necessary fittings, plumbing, valves and flow meter in a convenient package. Also available is the TOWER of POWER LTE™, offering a more compact design with basic features.

CAUTION: Always keep the controller away from heat and moisture. When necessary, clean with a damp cloth.

WARNING: Inspect all cables, wires, and connectors for wear and/or damage before every use. Do not use if cables, wires, and/or connections are damaged, loose, or worn. Replace damaged and worn parts with genuine Blichmann Engineering™ parts available online at BlichmannEngineering.com.

WARNING: The Gas BrewCommander™ Brewhouse Controller is only to be used in conjunction with a Ground Fault Circuit Interrupter (GFCI) protected power source. If you are uncertain about the status of your power source contact a licensed and qualified electrician familiar with National Electric Code standards before proceeding. Operating the Gas BrewCommander™ Brewhouse Controller in any fashion other than described in this manual can result in personal property damage, injury, electrocution, or death.

SYSTEM REQUIREMENTS

Burner:
The Brew Commander™ has been tuned to work seamlessly with a Blichmann HellFire™ burner, however other burners can be used with the controller if they meet the necessary requirements. Your burner must be capable of operating well at low power settings. If you cannot maintain a flame at about half power your system stability will suffer. Specifically, you should be able to reduce your heat to achieve an average heating rate of 1.5 F/min or less.

Fuel Supply:
The solenoid valve supplied is suitable for up to 25 PSI propane regulators and residential natural gas. Fuel flow rate through this valve is adequate to power Blichmann Engineering™ HellFire™ burners on both fuels, however, other burners may need a larger solenoid valve (not included). Do NOT install a solenoid valve that draws over 2A at 120V including inrush or you may damage the ignition start relay which is NOT a warrantable failure.

CONNECTING THE CONTROLLERS TO YOUR SYSTEM

WARNING: Make sure that the controller is NOT plugged in until you have fully connected the ignition and ground wires or electric shock could occur from the ignition wire!

CAUTION: Heat damages electronics. Locate the control units, solenoid valves, tower and wiring as far from heat sources (burners) as possible. You should never feel your control modules getting warm to the touch. If they do, they are too close to heat sources! The maximum surface temperature should never exceed 125F (52C). While the solenoid valves will get somewhat warm during operation they should never be uncomfortably hot to the touch. Locate them as far from the heat source as possible.

CAUTION: Always route wires away from heat sources and hot surfaces to prevent burning and short circuits.

IMPORTANT WARRANTY INFORMATION! Electronics damaged from excessive heat are not covered under warranty! If the controller or ignition module is uncomfortably hot to the touch then it is located too close to the heat source and needs to be moved.

Never Do These Things!

NEVER LEAVE THIS EQUIPMENT UNATTENDED.
NEVER ALLOW CHILDREN NEAR THIS EQUIPMENT.
NEVER Expose to heat or moisture. If it is warm to the touch it is too close to heat source.
NEVER HEAT COOKING OIL WITH THIS EQUIPMENT.
NEVER operate on soft, combustible or uneven surfaces like dirt, gravel, wood or asphalt.
NEVER operate indoors, in a garage, under an overhang, porch, deck, carport or similar structure.
NEVER use near and combustible chemicals, gasoline or other flammable vapors or liquids.
NEVER Bypass the GFCI circuit protection.
NEVER Exceed 125F (52C) surface temperature.
NEVER use the gas solenoid valve as a normal shutoff.

Always Do These Things!

ALWAYS OPERATE OUTSIDE ONLY, AT LEAST 30FT FROM OTHER STRUCTURES.
ALWAYS USE ONLY ON LEVEL AND STABLE CONCRETE, BRICK OR SIMILAR HARD NON-FLAMMABLE SURFACES.
ALWAYS Connect to a GFCI circuit.
ALWAYS Check that all fasteners are properly tightened prior to each use.
ALWAYS Use the propane tank shutoff valve or a separate valve when not in use.
ALWAYS Use genuine Blichmann Engineering replacement parts.

INSTALL THE GAS SOLENOID VALVE

The gas solenoid valve is turned on and off by the controller as needed to maintain the temperature of the tank. Locate it as close to the burner as possible but DO NOT locate it in an area that will expose it to excessive heat. If you can't comfortably rest your hand on the valve during operation it is too hot! We have included a male and a female flare X ¼" NPT fitting to aid you in connecting the valve to your gas supply.
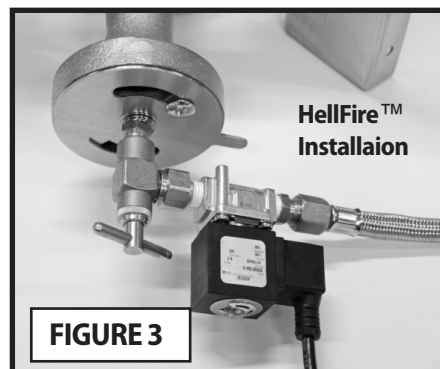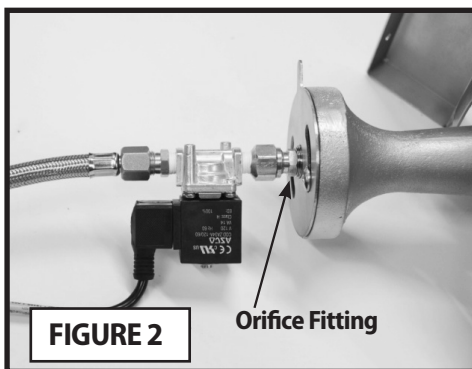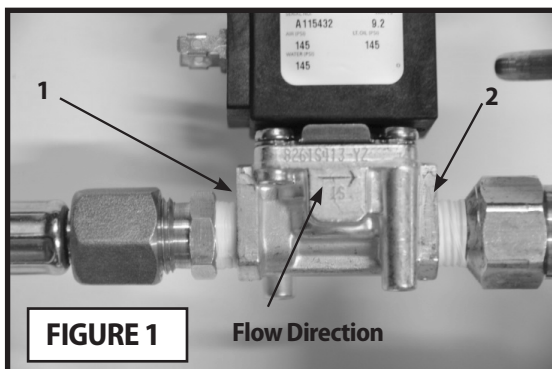
NOTE: Depending on the gas supply you have, you may need to procure additional or different fittings which are not included with the product. In ALL cases, follow your local codes and regulations. If you are not familiar with the local requirements, or are not comfortable doing this work yourself, we would recommend hiring a professional to do this for you.

Figure 2 shows a typical installation. Note that it is permissible to install the solenoid valve immediately after the regulator on the propane tank.

IMPORTANT: Valve failures from excessive heat are not covered under warranty!

WARNING: Install the valve with the gas flow going in the direction of the arrow marked on the valve. Figure 1. Installing it backwards can result in poor and/or unsafe operation! The inlet will also be marked with a "1" and the outlet with a "2".

WARNING: DO NOT use the solenoid valve as a normal shutoff for the gas! ALWAYS turn the propane tank or gas valve off at the source when not in use! Figure 2 and 3 show typical installations.

FIGURE 1   Flow Direction

FIGURE 2   Orifice Fitting

HellFire™ Installaion   FIGURE 3

BrewCommander ™ © Blichmann Engineering, LLC 2019   3

INSTALL THE IGNITION ELECTRODE

The ignition electrode is used to create a spark to automatically ignite the gas and is activated by the controller. It also lets the controller know if a flame is present.

IMPORTANT: For reliable operation it is important to install the electrode properly!

We have provided an electrode that can easily be modified (cut and/or bent) to fit nearly all burners. If you are installing in the current version of the Blichmann Engineering™ HellFire™ burner simply use the flame inspection hole as shown in Figure 5 for installation. For other burners, you will need to drill two holes to fasten and ground the electrode to the burner frame. Place two marks 3/8" (10mm) apart and about 1 inch above the surface of the burner. Strike both marks with a center punch. Drill one at 3/8" and the other at 3/16". Typical installations are shown in fig 4 and 5.

TIP: Stainless steel can be challenging to drill – use a cobalt or TiN coated (gold color) bit to drill the 3/16" hole.

Mark the electrode wire with a marker so that when bent 90 deg downward it will be in the center of the flame path. For HellFire™ burners, you'll want the electrode centered over one of the burner nozzles. Measure the distance from the surface of the burner to the mark on the wire and note this distance. Remove the electrode from the frame and using a pliers bend the wire down 90 deg. Install with the included #8-32 X 3/8" screw.

IMPORTANT: The tip of the electrode must be perpendicular to the surface of the burner and must be in the flame path to function properly! A spark gap of 3/16-1/4" (5-6mm) is needed for consistent ignition.

CAUTION: Do not hold the electrode by the ceramic insulator and take care not to crack the insulator! Cracked electrodes are not covered under warranty!

Trim the wire using a wire cutter to the length noted previously. Install the electrode and note the position of the tip of the wire with respect to the surface of the burner. Trim as needed to provide a 3/16-1/4" gap. It is OK to bend the wire a bit as needed to center the tip of the electrode. Figure 4 and 5 show typical installations.

FIGURE 4

FIGURE 5

3/16 - 1/4" Gap
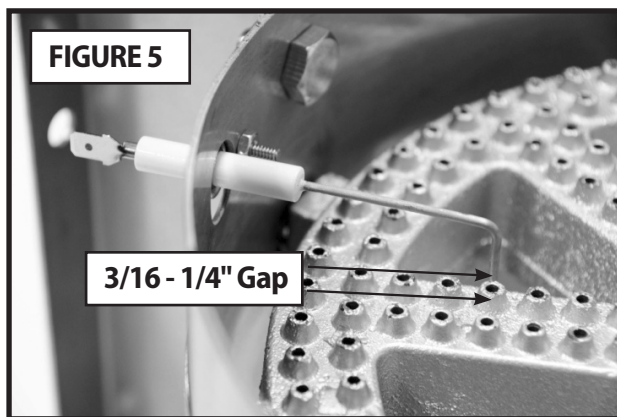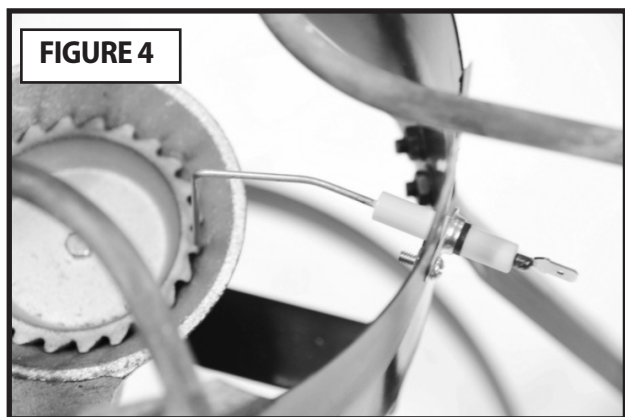
SPARKBOX™ Ignition Module

OVERVIEW

The SparkBox™ Ignition module comes standard with the Brew Commander™ Gas Brewhouse Controller and can be used for lighting any burner lit by direct spark ignition. This Ignition Module when used in conjunction with the BrewCommander™ can achieve automatic temperature control with exceptional precision and accuracy. We also offer the HellFire™ Burner, that has been designed to work seamlessly with these products. Burner sold separately.

The SparkBox™ features:
➡ Automatic Gas Solenoid Control.
➡ Natural or LP Gas Use.
➡ Flame Sensing.
➡ Warning Buzzer.
➡ 10 Second Ignition Attempt.
➡ Power Cycling Reset.
➡ Automatic 1 Hour Reset.

WARNING: Always discconnect the power supply from the device before making or modifying any connections to prevent electrical shock or equipment damage.

WARNING: Explosion hazard can cause injury or equipment damage.

WARNING: Inspect all cables, wires, and connectors for wear and/or damage before every use. Do not use if cables, wires, and/or connections are damaged, loose, or worn. Replace damaged and worn parts with genuine Blichmann Engineering™ parts available online at BlichmannEngineering.com.

WARNING: The SparkBox™ Ignition Module is only to be used in conjunction with a Ground Fault Circuit Interrupter (GFCI) protected power source. If you are uncertain about the status of your power source contact a licensed and qualified electrician familiar with National Electric Code standards before proceeding. Operating the SparkBox™ Ignition Module in any fashion other than described in this manual can result in personal property damage, injury, electrocution, or death.

CAUTION: Always keep the device away from heat and moisture.

IMPORTANT: If the burner doesn't ignite after 10 seconds the warning alarm will sound until the SparkBox™ is reset by cycling power to it. The safest way to cycle power to the SparkBox™ is to turn the controller power mode to off then back to auto or on.

OPERATION

Whenever the ignition module is supplied power the following sequence will occur. The Brew Commander™'s built in power regulation program will automatically control the power supplied to the SparkBox™ to maintain the programmed set temperature.
1. Power sent to the solenoid for it to open and begin supplying gas to the burner.
2. Then the ignition wire will send a continuous spark to the burner to ignite until the flame is sensed.
3. The ignition module will then continue to maintain a flame for the remainder of the time that power is supplied to the board.
4. When power to the ignition module is then interrupted or disconnected the power to the solenoid will also be interrupted, extinguishing the flame.

NOTE: It is okay to supply cyclic power to the SparkBox™ Ignition Module for short periods of time, this will not damage the components or reduce the life of the device.

WIRING, CONNECTIONS, AND POWER REQUIREMENTS

Ignition Cable Port – This port is used to connect the ignition module to the Igniter installed on the burner. This connection must be made with a genuine Blichmann Engineering™ Ignition Cable or the BrewCommander™ may malfunction due to electromagnetic interference.

Power In – This is the communication port between the BrewCommander™ and the SparkBox™. The Brew Commander™ will supply power to this port when the burner is called to be lit. This signal needs to be 102-138VAC 50/60 Hz and may draw up to 4 Amps.

Solenoid Power – This receptacle is used to output power to the solenoid when the burner is called to be lit, it must be wired directly to the solenoid by the supplied 6ft solenoid cable.

Ignition Cable Port

Power In

Solenoid Power

Installed Sparkbox™

Ground Clip Wire

Installed HellFire™
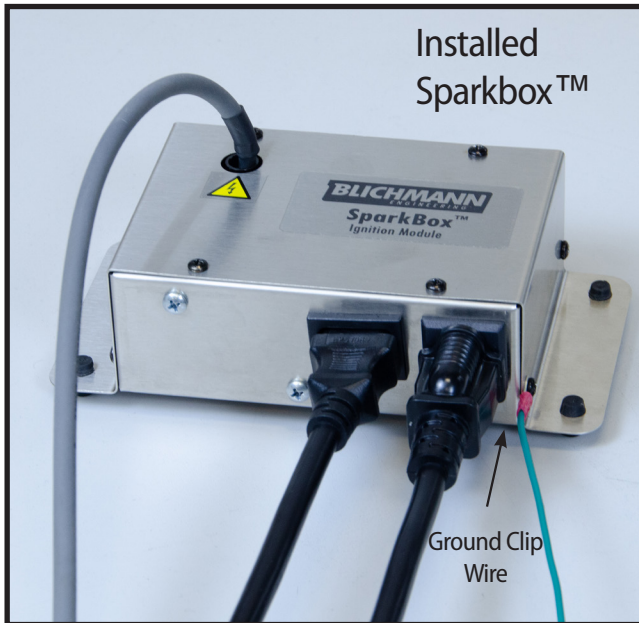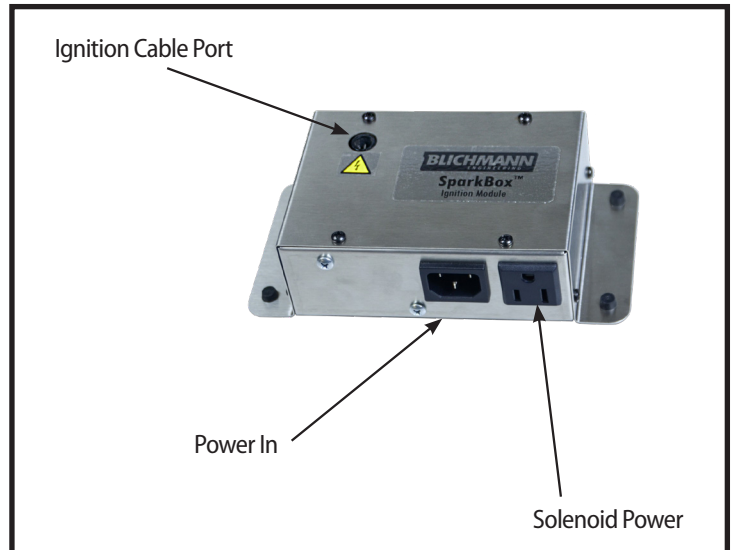
Optional SparkBox™ Mounting Kit

Available is an optional SparkBox™ mounting kit for mounting to the TOP Stand, TOP LTE Stand, and Top Tier Stand.

Installed Sparkbox™ on Tower of Power™ Stand

Installed Sparkbox™ on Tower of Power™ LTE Stand

SENSOR INSTALLATION

For installation of the temperature sensor in Hot Liquor Tanks and boil kettles , a ½" inch hole is required. Temperature sensors can be installed in the existing BrewMometer™ hole in Blichmann Engineering BoilerMaker™ kettles. Install the temperature sensor and bulkhead as shown in **Figure 6**.

IMPORTANT: Installing the temperature sensor directly in the mash tun will result in instability and severe overshooting of mash temperature. Always install the temperature sensor in the wort recirculation path as close to the heat source as possible as shown in **Figure 7**. Full TOP Stand and LTE TOP Stand are available for purchase to mount the BrewCommander™, SparkBox™, pump, wort chiller, flow meter and other accessories all in one convenient location.

TIP: Use the optional temperature sensor fitting, part number BE-000268-00, for inline sensor installation as shown in **Figure 8.**

CAUTION:
 • Do not pull sensor by cord, pull by stainless sheath only.
 • Do not remove sensor when kettle is full of liquid without optional thermowell.
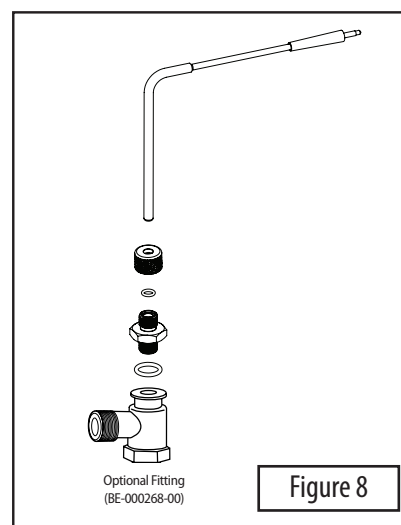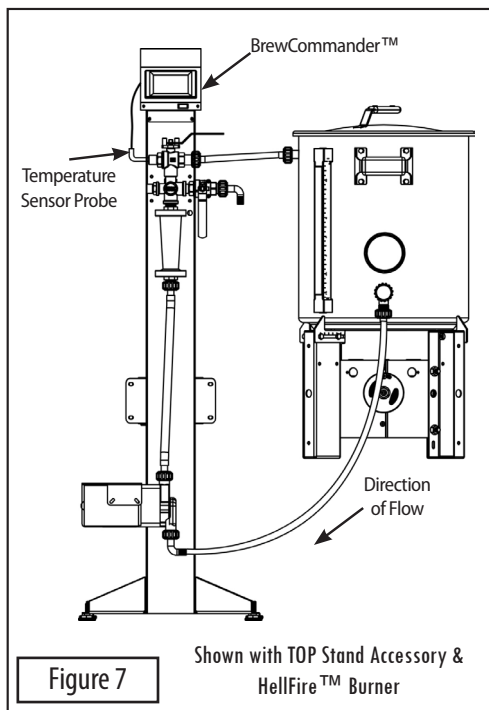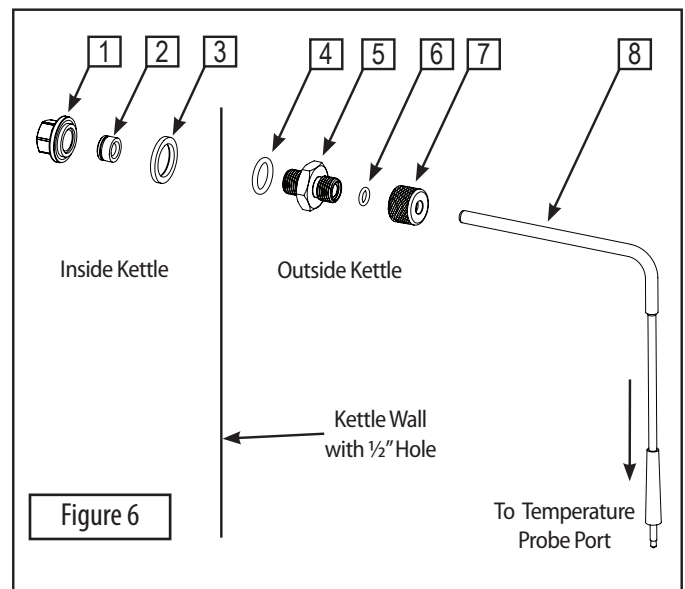
OPTIONAL THERMOWELL:
The optional Thermowell (BE-001473-03) is available to purchase to allow sensor removal in full kettles.
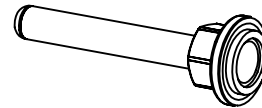
TEMPERATURE SENSOR ASSEMBLY

| Number	Part Number	Description
1	BE-000882-01	Sanitary Nut
2	BE-000882-01	Sanitary Nut Inner Seal
3	BE-000882-01	Sanitary Nut Outer Seal
4	BE-000013-00	Bulkhead O-ring -113
5	BE-001474-00	Weldless Captive Bulkhead
6	BE-001511-00	Captive Nut O-ring
7	BE-001475-00	Captive Nut
8	BE-001500-00	Temperature Sensor Probe

COMPLETE TEMPERATURE SENSOR ASSEMBLY

Inside Kettle

Outside Kettle

Kettle Wall with ½" Hole

To Temperature Probe Port

Figure 6

BrewCommander™

Temperature Sensor Probe

Direction of Flow

Shown with TOP Stand Accessory & HellFire™ Burner

Figure 7

Optional Fitting (BE-000268-00)

Figure 8

OPTIONAL 1/2" NPT ADAPTER:
The optional 1/2" NPT Adapter (TOP-007-01) converts to 1/2 - 20 straight thread to 1/2" male NPT thread.
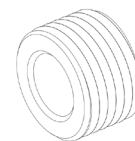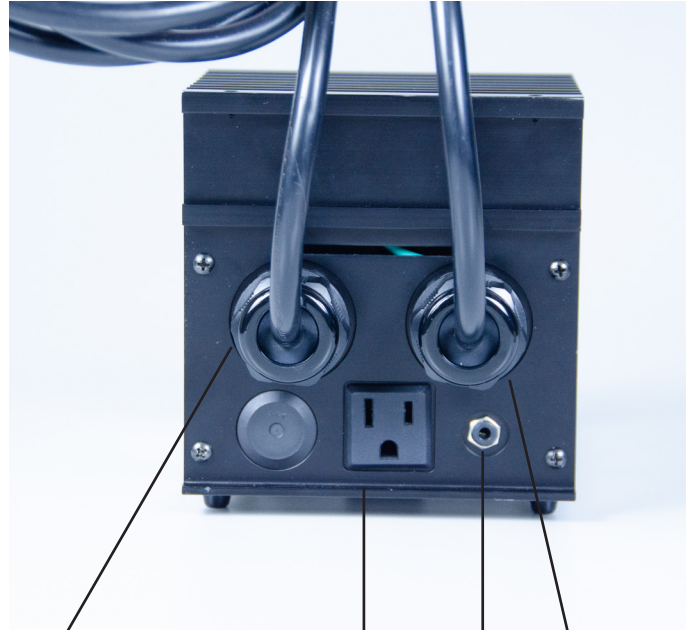
OPTIONAL 1.5" TRI-CLAMP ADAPTER:
The optional 1.5" Tri-Clamp Adapter (BE-001139-00) allows the sensor to be installed on a 1.5" Tri-Clamp fitting.

FEATURE CALLOUT

**POWER BUTTON
ON / OFF**

**FEMALE IEC
POWER OUT**

PUMP RECEPTACLE

**MALE NEMA 5-15
POWER IN**

**TEMPERATURE
SENSOR PORT**

**WIRED FROM
BOTTOM**

NOTE: For wiring out the bottom of the controller and for wall mounting, please visit our website at blichmannengineering.com to view the instructional video.

WALL MOUNTING THE CONTROLLER

A universal mounting kit (PN: aPS-PowerCont-Mount) is available for purchase that includes a din rail and set of screws and nuts for mounting any of our controllers and relay modules to a wall. To mount the Brew Commander™, the only parts from the kit that will be used are the DIN rail and the small 8/32 set screws. Hardware for fastening the DIN rail to the wall is not included.

Steps:
1) Rewire your controller out the bottom by following the instructions given in the rewiring video on our Blichmann Engineering™ YouTube channel.
2) Trim the included DIN rail to be 1/8" shorter than with width of the controller.
3) Mount the DIN rail to the desired location on the wall.
4) Slide the controller onto the DIN rail using the channel on the back of the controller.
5) Install 2 of the 8/32 set screws into the top of the controller being careful not to over tighten. Stop tightening the screws once the controller can no longer slide along the DIN rail.
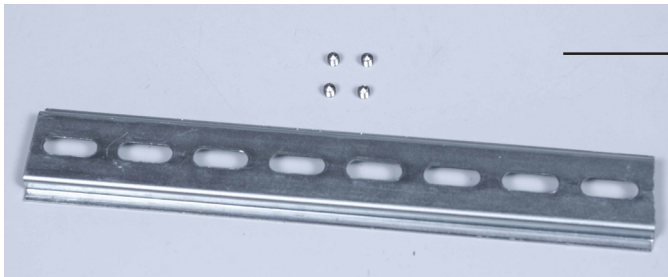
Hardware Required from Mounting Kit:
4 Set Screws
DIN Rail

Set Screw Location
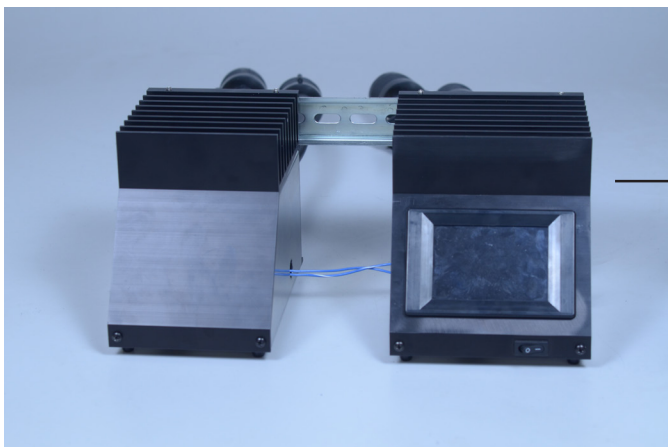
Controller & Relay Module Shown with DIN Rail

CONTROLLER SCREEN OPERATION
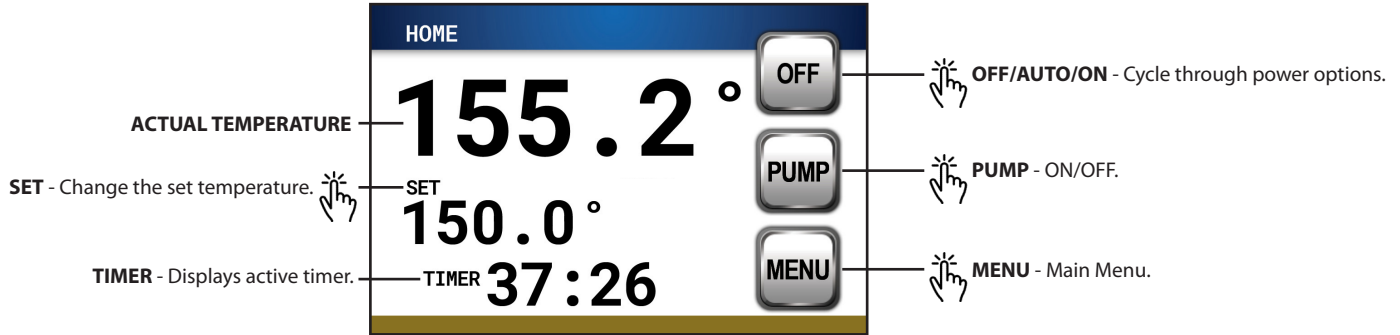
SCREEN CONVENTIONS

▦ = Active Button   ▦ = Inactive Button   🖐 = Interactive

TIP: A screen operation tutorial video is available at blichmannengineering.com.

HOME SCREEN

ACTUAL TEMPERATURE

SET - Change the set temperature.

TIMER - Displays active timer.

OFF/AUTO/ON - Cycle through power options.

PUMP - ON/OFF.

MENU - Main Menu.

ACTUAL TEMPERATURE - Displays the sensor temperature value.
  NOTE: If the temperature is beyond the "out of range" value (programmable in basic settings) the text color will change. Blue is below (too cold), black is in the desired range, and red is above the range (too hot).

SET TEMP - This is the desired temperature. Pressing this value will display a numerical keypad. Enter the desired value and press ENTER to accept.

TIMER - This value displays the remaining time of the active timer. This value can't be changed from the home screen.

OFF/AUTO/ON - Press button to cycle through the options below.
  OFF - Power to the burners is disabled.
  AUTO - The burner will automatically light as needed to maintain the desired SET temperature.
  ON - The burner will turn on and continually run. This setting overrides the automatic control. The SET value will change to BOIL.

PUMP - Turns the auxiliary 120V receptacle located on the back of the unit on and off. Green illuminated button indicates that the power is in the ON mode.

MENU - Pressing this button will open the main menu screen.

MENU SCREEN

MASH - Mash Profile.

SETTINGS

TIMER - Set a timer.

BOIL - Boil Profile.

HOME - Return to the HOME Screen.

Firmware 1.1:1.2

Firmware Version: Ver 1.1:1.2
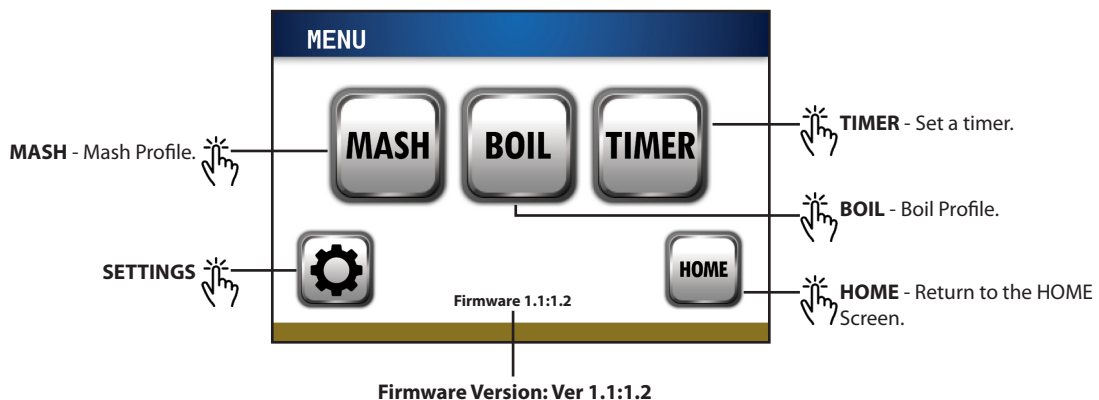
MASH PROFILE

MASH PROFILE		
	TEMP	TIME
1	122°	20
2	149°	60
3	168°	10
4	0	0
5	0	0

SELECT - Highlight a value.

PROFILE - Switch between 9 custom Mash Profiles.

KEYPAD - Enter a value.

RESET - Cancel the active profile.

HOME - To the Home Screen.

PLAY / PAUSE - Start / pause the selected profile.

PROFILE - Switch between 9 custom profiles that can be stored for future use. Values are saved upon entry.

SELECT - Press SELECT to cycle through TEMP and TIME.

KEYPAD - When a temperature or time is selected and flashing, press the keypad to change that value and press enter.

PLAY / PAUSE - Start / pause the selected profile. This button will become a pause button when a profile is active.

RESET - When a profile is active, press the RESET button to end the profile. To reset an active timer, press pause and then press reset.

HOME - To the Home Screen.

BOIL PROFILE

BOIL PROFILE			
	TIME (MIN)		TIME (MIN)
BOIL LENGTH — BL	60	4	10
1	60	5	0
2	45	6	0
3	15	7	0
TIMER — TIMER		0:00	

SELECT - Highlight a value.

PROFILE - Switch between 9 custom Mash Profiles.

KEYPAD - Enter a value.

RESET - Cancel the active profile.

HOME - To the Home Screen.

PLAY / PAUSE - Start / pause the selected profile.

PROFILE - Switch between 9 custom profiles that can be stored for future use. Values are saved upon entry.

SELECT - Press SELECT to cycle through TEMP and TIME.

KEYPAD - When a temperature or time is selected and flashing, press the keypad to change that value and press enter.

PLAY / PAUSE - Start / pause the selected profile. This button will become a pause button when a profile is active.

RESET - When a profile is active, press the RESET button to end the profile. To reset an active timer, press pause and then press reset.

HOME - To the Home Screen.

BASIC SETTINGS

To navigate through the basic settings, press the SELECT button to scroll between them. Use the up/down buttons to change the value. Pressing SELECT again will accept the new value.

START DELAY – The Start Delay is used to automatically heat mash strike water at a future time. Enter the desired delay in hours. Press the HOME button. DELAY will show in OFF/AUTO/ON button. The TIMER display will show remaining time. Be sure to set the desired temperature and % power. If it is desired to have the pump turn on at the end of the delay timer, first ensure that the pump is properly primed and the appropriate valves needed for recirculation are open. Then, set the pump button to on (green). **NOTE:** As a safety feature, the controller will automatically turn off the heater after 6 hours if the SET point has not been changed.

SET PT ALARM – This audible alarm will alert the user that the set point is close to being reached. Values from 0-9° can be selected. Choose OFF to disable this alarm. Default value is 5°.

OUT OF RANGE – This setting will alert the user that the actual temperature is outside of the desired SET temperature range. Values from 0-9° can be selected. Choose OFF to disable this alarm. Default value is 2°. The text color of the temperature displayed on the home screen will change based on this setting. Blue is below (too cold), black is in the range, red is above the range (too hot).

AUDIBLE ALARMS – Used to enable or disable ALL audible alarms. Color indicators will still function. Value is ON/OFF.

UNITS – Changes all temperature Units between C and F.

CALIBRATE - The sensor supplied with this product is extremely precise and accurate and does not require calibration. However, calibrate can be used for sensor to sensor variation, if the user so desires to fine tune this reading, or simply match to another sensor. For example, if CALIBRATE is set to +0.7, the sensor values will be increased by 0.7°.
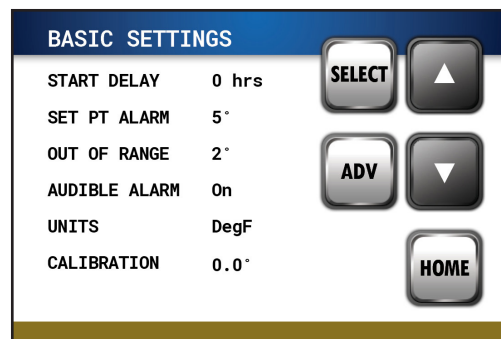
ADVANCED SETTINGS

In the BASIC SETTINGS screen press the ADV button to navigate to the advanced settings screen.

The advanced settings are intended to enrich the user experience for the ultimate in performance. The default values will provide excellent control for most applications.

MASH HEAT RATE - This setting is used to compensate for the heating delay time between mash steps when using the Mash Timer. Since each system will vary in how fast it can heat, the user will need to experiment with their system to measure the approximate heating rate in degrees per minute. The controller will add extra time to the rest to allow the mash to heat to the rest temperature before activating the rest timer. During the ramp time the TIMER will alternate between RAMP and remaining time. Default setting is 2° per minute.

Measuring the Ramp Rate
To measure the approximate ramp rate of your system measure the time it takes to go through a typical ramp. Divide the change in degrees by the ramp time in minutes. For example, if ramping from 145 F to 155F takes 5 minutes, the ramp rate is (155-145)/5=2 deg/min. Enter this value in MASH HEAT RATE.

RIMS OFFSET - This offset is used for Recirculation Infusion Mash System (RIMS), Heat Exchanger Recirculation Mash System (HERMS), or the Blichmann Engineering™ BrewEasy™ Kettle RIMS system. In these systems the temperature at the sensor will read an average of a few degrees higher than the actual temperature in the mash due to heat losses. The RIMS offset increases the temperature of the mash to match the Actual Temperature displayed on the BrewCommander™.

Measuring the RIMS Offset
Ensure the RIMS OFFSET is set to 0.0. Next, calibrate your mash thermometer to match the BrewCommander™ sensor so that you can accurately measure the temperature difference between the mash and the recirculation temperature. Calibration at your typical mash temperature is most accurate. During a mash, allow the mash thermometer to reach a steady state temperature. This may take 30-45 minutes. Subtract the mash thermometer temperature from the BrewCommander™ temperature. Enter this value into the RIMS OFFSET. From this point forward, the brewer can enter the desired mash SET temperature without having to compensate for temperature losses.
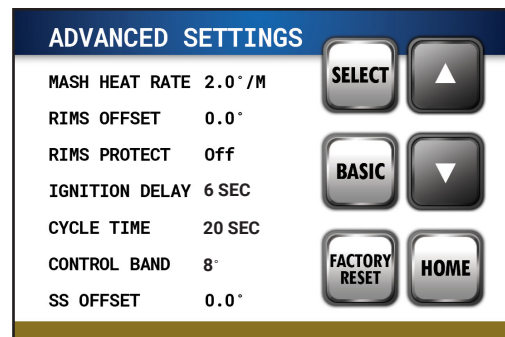
RIMS PROTECT - If a RIMS heater is on, but no wort is flowing, the wort will continue to heat and may scorch. The RIMS PROTECT feature is used to prevent this situation by automatically turning the RIMS heater off when the pump is turned off. If the user desires, the pump and heater can be manually turned back on. When set to OFF, this implies the user is not using the controller in a RIMS system and the auto heater disable feature will not be enabled. This feature is not needed for HERMS systems. The default setting is OFF.

IGNITION DELAY - This value adjusts the power cycle to accommodate for gas systems that have a delay between power being supplied and the flame igniting. This creates a minimum on time for the power supplied so that the burner always ignites when power is called for and gas is not allowed to be wasted or to dangerously build up around the burner without igniting. The controller will never call for the burner to turn on for a length of time that less that the ignition delay setting. This value is preset for a Blichmann Hellfire® burner. If a different burner is being used, set it in accordance with that particular burner's operation. The default is 6 Seconds.

> ### Setting the "Ignition Delay"
> Use a stopwatch to measure the time between the "heat" symbol being displayed on the temperature controller and the flame fully igniting on the burner. Take this measured time and add 2-4 seconds to it as a minimum flame time. This will be your new Ignition Delay value. If this value is 7 seconds or greater, adjusting the cycle time to a higher value than the default 20 sec is recommended. A (Cycle Time) : (Ignition Delay) ratio of 3:1 or greater is recommended. For example, a 10 second ignition delay would require a minimum of a 30 second Cycle Time.

CONTROL BAND - This value adjusts the range near the set point that the controller begins to cycle the power on and off. The default value is 8° (+/- 4° from the set point) and should not need to be adjusted. Increasing this value reduces overshoot when ramping to the set point, but also increases the time to reach the setpoint. Decreasing this value decreases the time to reach the setpoint, but also increases overshoot.

CYCLE TIME - This value determines how frequently the power is cycled on and off when the temperature is within the control band. The default value is 20 seconds.

SS OFFSET (Steady State Offset) - Steady State is when the temperature of the kettle is no longer rising or falling but has leveled out to a steady temperature. The steady state offset corrects a difference between the Actual Temperature and Set Temperature on the BrewCommander™. This setting adds a small increase in power to fine tune the system. This is particularly helpful when brewing in cold environments.

FACTORY RESET - This feature will reset all the settings from any altered state back to the original factory settings programmed into the controller. It will give the user the option to select ELECTRIC defaults or GAS defaults. Please note that all mash and boil profiles will be erased during this reset.

The kettle's thermometer has stabilized at 151°F and will not get any hotter. The BrewCommander™ is set at 152°F After a 1°F Steady State Offset was applied, the temperature of the kettle will now stabilize at the desired temperature.

WITH SS OFFSET
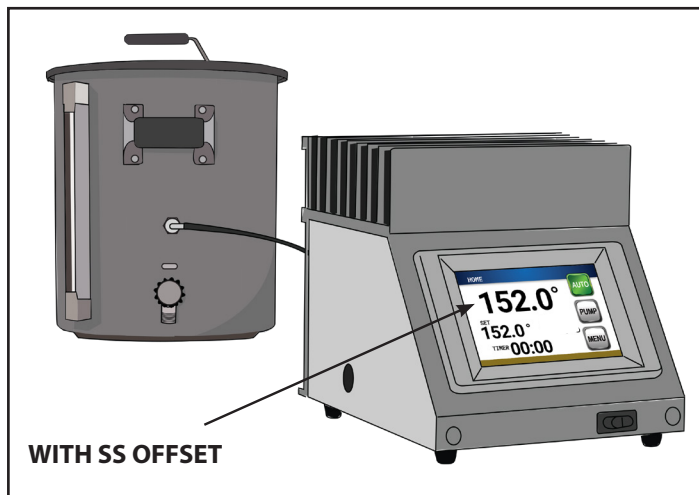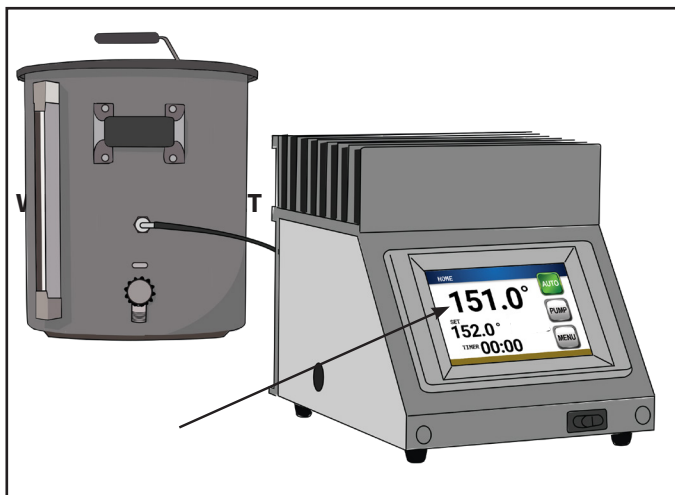
RIMS / HERMS SYSTEM REQUIREMENTS

For the BrewCommander™ gas modular brewing system to function properly in a recirculation system (RIMS / HERMS), your brewing system must meet some basic requirements. If your system is unable to meet these requirements please contact your RETAILER for guidance. We cannot guarantee the performance of the product if these basic minimums are not met.

For RIMS brewers, your mashing system must be capable of continuously recirculating wort with a pump for the duration of the mash without sticking.

IMPORTANT: Grain bed flow rates are highly dependent on crush quality and mash tun geometry. Move to a coarser crush if you are not able to achieve the above flow rates. It is also recommended that you allow a 10 min dough-in prior to turning on the pump. This allows air to purge from the grain bed and for the grain to fully absorb the water.

Finished Batch Size Gal (L)	Minimum Flow GPM (LPM)
5 (19)	0.5 (2.8)
10 (38)	0.75 (3.8)
15 (57)	1.25 (4.75)
20 (76)	1.5 (5.7)
32 (121)	2.25 (8.5)

DIRECT FIRE RIMS SETUP AND OPERATION TIPS

Recommended setting changes from the default settings.

ADVANCED SETTINGS
RIMS OFFSET: 0.7°F
RIMS PROTECT: ON

IMPORTANT: It is recommended that before changing the above settings to read the descriptions in the basic and and advanced setting sections to fully understand how these settings function.
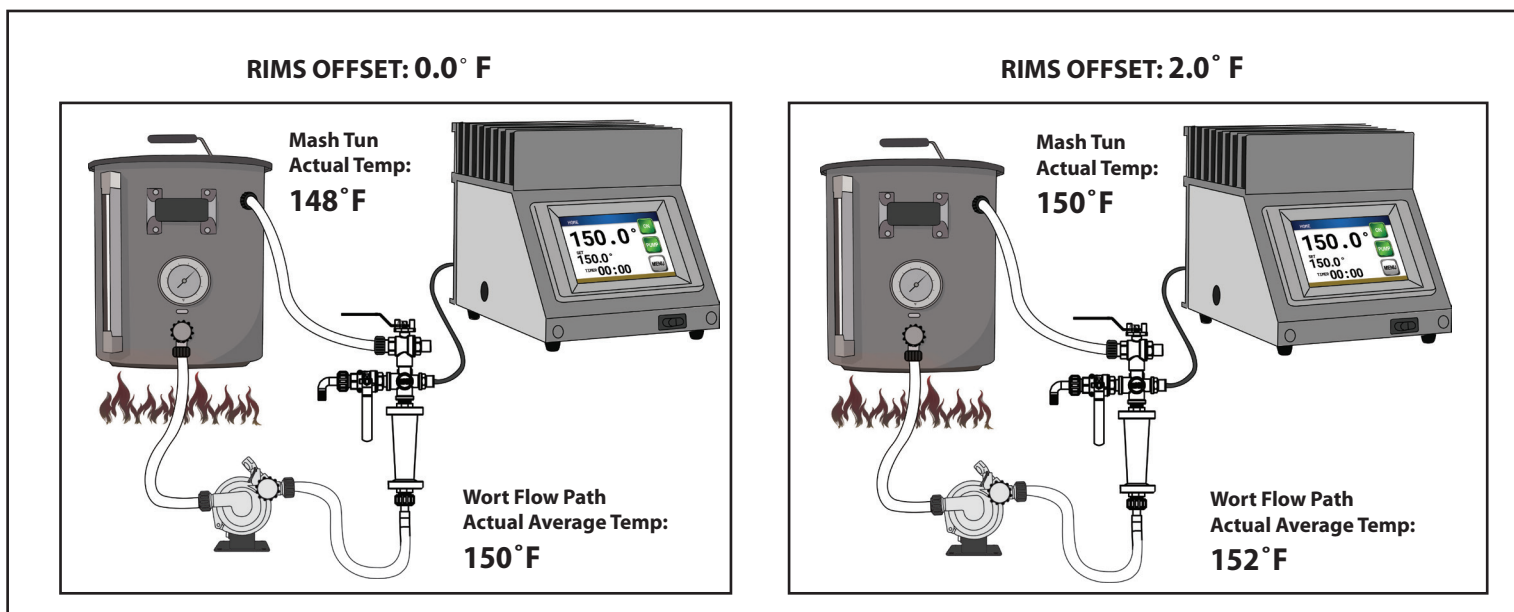
General Operation
When using a direct fire RIMS, the temperature reading taken in the path of the flowing wort will read slightly higher than the vessel temperature. This difference varies depending on the size of the flame and the rate of flow of the wort or hot liquor through the system. When the vessel is at a steady temperature this temperature difference is around 1°F due to normal heat losses in the system. When using the RIMS Offset feature, the temperature displayed on the controller will always be the measured value from the temperature sensor minus the programmed RIMS Offset value in the advanced settings. If using the RIMS PROTECT feature, whenever the pump is cycled from ON to OFF, it will automatic extinguish the burner to prevent scorching.

Mashing
The brew commander can compensate for losses in the system by using the RIMS OFFSET feature. The set point should be programmed to the desired mash temperature. The above recommended Advanced settings are a good starting point, and can be adjusted with experience. Refer to the advanced settings section for details.

TIP: If step mashing, decreasing your control band will help speed up the heating between steps, but larger temperature fluctuations will be experienced in the system.

RIMS OFFSET: 0.0° F
Mash Tun Actual Temp: 148°F
Wort Flow Path Actual Average Temp: 150°F

RIMS OFFSET: 2.0° F
Mash Tun Actual Temp: 150°F
Wort Flow Path Actual Average Temp: 152°F

HERMS SETUP AND OPERATION TIPS

ADVANCED SETTINGS
MASH HEAT RATE: 1Deg
RIMS OFFSET: *see Mashing section below*

General Operation
It is important to be aware that when using a HERMS Coil during a mash the temperature readings taken in the HERMS kettle (typically the HLT) will be higher than the actual temperature in the mash. This difference varies depending on rate of flow, whirlpooling in the HERMS vessel, and temperature losses unique to the system. When using the RIMS Offset feature, the temperature displayed on the controller will always be the measured value from the temperature sensor minus the programmed RIMS Offset value in the advanced settings. If using the RIMS PROTECT feature, whenever the pump is cycled from ON to OFF, it will automatic extinguish the burner to prevent scorching.

Heating the Strike Water
A unique feature of HERMS systems is that there are many different ways to achieve the heating of strike water. These different methods have unique pros and cons and varying equipment needs. Experimentation and practice with your particular system is the only way to truly fine tune strike water temperature for your mash.

Method 1 is to recirculate the mash strike water through the HERMS coil while heating the HLT.
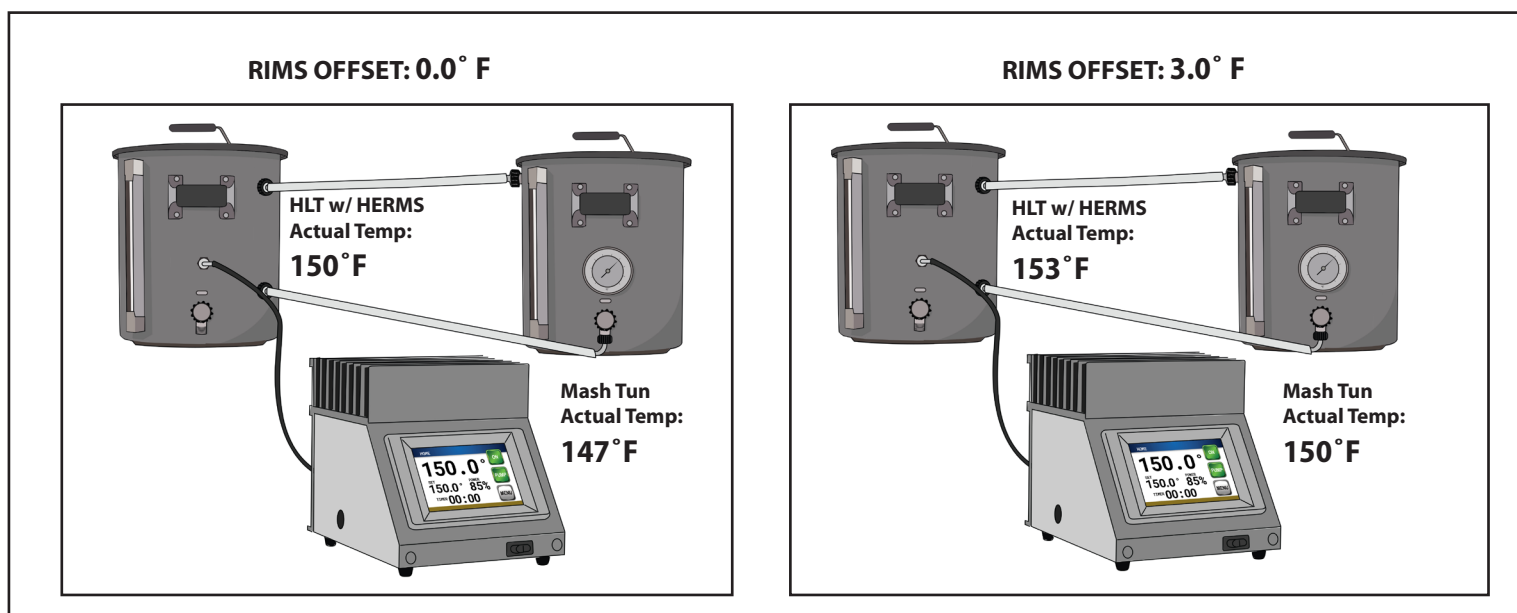
Method 2 is to heat the HLT (where the HERMS coil is located) to the desired temperature, while heating the strike water in your boil kettle with a second controller. This method is faster due to using two heat sources.

Mashing
While mashing, the brewer must maintain a slightly higher temperature in the HLT than the desired mash temperature due to heat losses and inefficiency of the heat exchanger. Whirlpooling in the hot liquor tank significantly increases the heat exchanger efficiency thereby reducing ramping times. For more information about our Kettle Whirlpool Kit, visit https://www.blichmannengineering.com/whirlpool-kit.html.

The RIMS offset can be programmed to compensate for losses in the system. If whirlpooling in the HLT during the mash, the RIMS OFFSET should be programmed to 3°F. If not, this should be set to 5°F. The SET point should be programmed to the desired mash temperature. With experience these settings can be fine tuned.

For step mashing with a HERMS system, a mash heat rate of 1°F or lower is recommended over the default 2°F. This allows more ramping time between steps to allow the slower heating rate of the HERMS system to reach the next mash step.

RIMS OFFSET: 0.0° F

HLT w/ HERMS
Actual Temp:
150°F

Mash Tun
Actual Temp:
147°F

RIMS OFFSET: 3.0° F

HLT w/ HERMS
Actual Temp:
153°F

Mash Tun
Actual Temp:
150°F

Blichmann Engineering Product Warranty

A. Limited Warranty

  1. Blichmann Engineering warrants to the original purchaser that this product will be free from manufacturing defects in material and workmanship for a period of one (1) year from the date of purchase by the customer. Proof of purchase is required. Blichmann Engineering's obligation to repair or replace defective materials or workmanship is the sole obligation of Blichmann Engineering under this limited warranty.

  2. This product is for home use only. The limited warranty covers only those defects that arise as a result of normal use of the product and does not cover any other problems, including, but not limited to, those that arise as a result of:

        a. Improper maintenance or modification;

        b. Damage due to incorrect voltage or improper wiring by customer;

        c. Operation outside of the product's specifications;

        d. Carelessness or neglect to operate the product in accordance with instructions provided with the product;

        e. Damaging the tamper label on the product;

        f. Damage by over-tightening the fasteners;

        g. Failure to follow cleaning and / or maintenance procedures; or

        h. Exceeding published operational temperatures.

  3. Blichmann Engineering reserves the right to request delivery of the defective component for inspection before processing the warranty claim. If Blichmann Engineering receives, during the applicable warranty period, notice of a defect in any component that is covered by the warranty, Blichmann Engineering shall either repair or replace the defective component with a new or rebuilt component at Blichmann Engineering's option.

  4. Blichmann Engineering must be notified within seven (7) days of the delivery date of any shipping damage. Customer is responsible for shipping damage outside of this time period. Approval for return must be provided by Blichmann Engineering prior to any return. Customer is responsible for keeping all original packaging material for warranty returns. Blichmann Engineering is not responsible for damage from improperly packaged warranty returns, and these repair costs will be the sole responsibility of the customer. Shipping costs for warrantee returns are covered only for the contiguous United States.

  5. Blichmann Engineering's limited warranty is valid in any country where the product is distributed.

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B. Limitations of Warranty

  1. Any implied warranty that is found to arise by way of state or federal law, including any implied warranty of merchantability or any implied warranty of fitness, is limited in duration to the terms of this limited warranty and is limited in scope of coverage to this warranty. Blichmann Engineering disclaims any express or implied warranty, including any implied warranty of fitness for a particular purpose or merchantability, on items excluded from coverage as set forth in this limited warranty.

  2. Blichmann Engineering makes no warranty of any nature beyond that contained in this limited warranty. No one has authority to enlarge, amend, or modify this limited warranty, and Blichmann Engineering does not authorize anyone to create any other obligation for it regarding this product.

  3. Blichmann Engineering is not responsible for any representation, promise, or warranty made by any independent dealer or other person beyond what is expressly stated in this limited warranty. Any selling or servicing dealer is not Blichmann Engineering's agent, but an independent entity.

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C. Limitations of Liability

  1. The remedies provided in this warranty are the customer's sole and exclusive remedies.

  2. Except for the obligations specifically set forth in this warranty, in no event shall Blichmann Engineering be liable for direct, indirect, special, incidental, or consequential damages, whether based on contract, tort, or any other legal theory and whether or not advised of the possibility of such damages.

  3. This warranty does not cover, and in no event shall Blichmann Engineering be liable for, travel, lodging, or any other expense incurred due to manufacturing defects in material and workmanship, or any other reason.

  4. Any performance of repairs after the warranty coverage period has expired or performance of repairs regarding anything excluded from coverage after this limited warranty shall be considered good-will repairs and they will not alter the terms of this limited warranty, or extend any warranty coverage period.

  5. Venue for any legal proceedings relating to or arising out of this warranty shall be in Tippecanoe County, Indiana, United States, which courts will have exclusive jurisdiction.

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D. Local Law

  1. This warranty gives the customer specific legal rights. The customer may also have other rights that vary from state to state in the United States or other countries.

  2. To the extent that this warranty is inconsistent with local law, it shall be deemed modified, only to the extent necessary to be consistent with such local law.

This product uses FDA and/or NSF approved food grade materials anywhere the product touches the beverage.

Warning: This product contains or may contain chemical(s) known to the State of California to cause cancer, birth defects, or other reproductive harm.