



EINBREW 3V2P

Electric Nano Brewing Controller

For 2 & 3 Vessel Systems

USER INSTRUCTIONS

INTRODUCTION

Congratulations on your investment in an EINBREW 3V2P electric brewing controller. Our precise temperature control, automatic mash steps, Boil Detect and hop insertion alarms means that you can focus on what you really want – making great beer with your home brewery.

There's nothing as satisfying as putting together your own brewery, however dealing with complex electrical and temperature control can be concerning – not only making sure everything works the way you want, but safely too! EINBREW 3V2P takes away those concerns with a flexible, configurable and industrial-grade control system – all expertly engineered into an easy to install package.

We'll work with your existing heaters and pumps – no need to purchase additional, expensive equipment. Our control will help you make a great batch of sweet wort every time, and give you the repeatability you want.

Our temperature control will automatically adjust itself to your system's requirements – you don't need to be a chemical engineer to get brewing.

These user instructions will help you get the best out of your EINBREW 3V2P system and allow you to use it safely, and we recommend you read through them fully before installation and starting your brew day!

For further help, see EINBREW.com or search 'EINBREW' or '3V2P' on YouTube.com

CONTENTS

Introduction	2
Contents.....	3
Safety Information	5
Technical Specifications	6
Components and Accessories	7
Brewing System Requirements.....	8
Getting Started	11
Brewing System Integration.....	12
Installing Heating Elements	12
Installing C14 Plugs on Pump Leads.....	13
Installing Temperature Probes to Brewing Vessels	14
Extending the EINBREW 3V2P C19 power lead	14
Replacing user-replaceable fuses	15
Drilling Holes in Stainless Steel Vessels for Heating Elements and/or Temperature Probes	15
Mounting the Control Panel	15
Mounting external relays and SSRs on special order models.....	16
Basic System Testing.....	18
Control Panel	19
Configuration Menu.....	24
Preparing for Brewing.....	26
Entering your Recipe.....	26
Setting Preheat/Mash In Stage	27
Setting Mashing Stage	27
Setting Boiling Stage/Automatic Boil Detect	27
Setting Hop Insertions	28
Setting Cooling Stage	28
Brewing Wort.....	29
Pre-Heat/Mashing In Stage.....	29
Mashing Stage.....	29

Boiling Stage / Automatic Boil Detect.....	29
Cooling Stage	30
Brew Complete!	30
Cleaning	31
Troubleshooting.....	32
Maintenance Menu	36
Warranty.....	39
Maintenance.....	39
Returning EINBREW 3V2P for repair.....	39
WEEE Regulations	39

SAFETY INFORMATION

- Please inspect your EINBREW 3V2P system and accessories for damage when you receive it. If there is any damage, please do not use the system and contact your supplier or Support for assistance.
- Do not operate the system if the power leads show any signs of damage or wear.
- If you need to clean the surface of your EINBREW 3V2P system, please ensure that it is fully disconnected from the mains supply beforehand. We recommend removing the plug from the socket to ensure disconnection. Use only a damp cloth and do not allow liquid to come in contact with EINBREW 3V2P, and ensure the vessel is dry before reconnecting the electricity supply.
- **The EINBREW 3V2P MUST be used with a RCD/GFCI/RCBO device. Ensure that you test it prior to every use. Installation by a competent person (e.g., Electrician) is required.**
- Ensure that the supplied power lead is fully unwound during use. If using any extension leads, ensure that they are fully unwound and have an adequate capacity when unwound.
- EINBREW 3V2P is not to be used by children or vulnerable adults, or around pets. Please ensure that the device is only used with adequate supervision to ensure safety.
- EINBREW 3V2P does not contain any internal user serviceable parts, and should not be disassembled or repairs attempted. Please contact your supplier or Support for any assistance required.
- Ensure that EINBREW 3V2P is positioned as far away as possible from liquids and vapours being used in the brewing process or condensate paths that may form – its enclosure is not water-tight.
- You must manually control the Pumps during brewing. This is especially important if you are using a RIMS system, as it can be dangerous to operate the heater without the pump and water circulation.
- Do not operate your brewery or EINBREW 3V2P unless you are certain it has been correctly and safely setup. You may need to refer to a qualified/licensed electrician to achieve this.
- **DO NOT USE THIS PRODUCT AS AN ISOLATION DEVICE, TO ISOLATE PUMPS, ELEMENTS OR ANY EQUIPMENT.**

TECHNICAL SPECIFICATIONS

Feature	EINBREW 3V2P
Product Dimensions	300mm × 260mm × 80mm
Power Supply Input	230Vac, 50/60 Hz; ~20 W for the controller, excluding connected pumps and heaters
Total Current (including pumps, controller, element if applicable)	3A maximum combined for controller and pumps. 16A maximum combined for the controller, pumps and one active heating element. Special-order external relay/SSR models have separate electrical instructions.
Pump Outputs	Pumps should be 230Vac mains powered. We advise that you do NOT use switch mode power supplies on pump outputs.
Control Precision	0.1C (or 0.1F in Fahrenheit mode)
Temperature Measurement Accuracy	0.1C (or 0.1F in Fahrenheit mode)
Heating Elements Supported	2, internally switched C19 heater outlets for Hot Liquor Tank and Boil Kettle, consecutive use. Special-order external relay/SSR models have REDEL-4 heater-control sockets.
Pumps Supported	2, 2.5A Max (1.2A each), C13 outlets (man & auto control) Pumps should be mains powered. DO NOT use switch mode power supplies on pump outputs!
Product Weight	3kg
Environmental	IP43, keep dry, splash proof fascia.
Brewing Vessels Supported	3, for Hot Liquor Tank, Mash Tun and Boil Kettle
Temperature Monitoring	YES, 3 PT100 sensors (Hot Liquor Tank, Mash Tun and Boil Kettle)
Input fuses	2, 3A, 20mm x 5mm (Internal – Pump and Controller)
Power fuses	2 × 16 A, 32 mm × 6.5 mm (External – Standard Model)
HERMS Support	YES
RIMS Support	YES
Audible Alarms	YES
Visible Alarms	YES
Audible Cooling Alarm	YES
Visible Cooling Alarm	YES
Automatic Timer	YES
Recipe Stored in Memory	YES, one recipe.
Programmable Recipe	YES, 9 programmable mash stages
Automatic Boil Detect	YES
Microprocessor Control	YES
Hop Insertions Alarms	YES, 9 programmable insertion alarms
Ergonomic Design	YES
Warranty	Limited lifetime
Product Compliance	CE and LVD Compliant
Country of Manufacture	United Kingdom



COMPONENTS AND ACCESSORIES

Your EINBREW 3V2P system will come shipped with the following components. When you unpack please ensure you check everything is there, and if any parts are missing please contact your supplier or Support immediately.

- 1) 1 x EINBREW 3V2P Electric Brewery Controller
- 2) 1 x Power Lead, IEC C19, 2m lead.
- 3) 3 x PT100 temperature probes.
- 4) 2 x C20 heating-element plugs (Standard model).
- 5) 2 x Pump output plug, C14. We advise you do not use switch mode power supplies on these outputs.
- 6) 1 x User Instructions (detailed).

BREWING SYSTEM REQUIREMENTS

We aim for EINBREW 3V2P to take care of electrical control for you, leaving you to concentrate on designing and building your brewing system!

Constructing your own Electric Brewery is beyond the scope of these user instructions, and there are a number of great guides out there that'll help you achieve this. There are also a number of performance and safety issues to consider when specifying and putting together your brewery.

However, for EINBREW 3V2P to work effectively, there are some areas to consider.

- Your heating elements must be appropriately sized for the amount of wort you're trying to heat/produce, whilst meeting the maximum EINBREW 3V2P power restrictions. If the heating elements are too small, it may take a long time to increase the temperature of the wort as you go through the brewing process, especially when boiling. In the worst case, you may be unable to maintain your target temperature at all due to losses. You can also improve system performance by ensuring that you keep a lid on your vessels when brewing, and insulating the vessels. Elements that are too large may result in scorched wort, or considerable temperature overshoot and oscillation during heating.
- EINBREW 3V2P supports one heating element for the Hot Liquor Tank, and one heating element in the Boil Kettle via C19 outlets. This can only be used consecutively, not concurrently. For the Hot Liquor Tank, the element can be directly in the vessel, or you can use an external heating element through which wort is pumped around. Special-order relay/SSR models control external heater circuits; follow the electrical ratings and installation instructions supplied for that model.
- Your system pump must be sufficiently powerful for the task – importantly, if using RIMS the water flow must be able to remove heat from the in-circuit heating element at a sufficient rate, or you may encounter issues where the water is e.g. boiling at the heater itself and much cooler elsewhere. The pumps must also be rated for use at the operating temperature – it is worth noting that many pumps will not operate correctly at 100C (boiling) due to cavitation. You ideally want the temperature throughout the system to be as equal as possible, helping to reduce temperature overshoot and oscillation. In the worst case, you could encounter equipment damage or scorched wort. Similarly, the pump must be powerful enough to continuously recirculate the wort through your mash without sticking, if relevant. The amount of flow required can also vary depending on the type of grain and crush quality used.
- It is important that you do use pumps in your system where feasible, as if the volume of water is not well mixed, the accuracy and quality of the control system will degrade.
- Ensure that your system interconnector pipes are of sufficient diameter to let through enough flow, and is rated for use at the operating temperature. Make sure you test the system with the pumps running and cold water after installation, to ensure there's no leaks – these could be dangerous when working with heated wort!

- Ensure that you have added sufficient filtering to the pump inlet – otherwise, you may encounter clogging or flow restrictions after adding grain due to debris or grain in the fluid path/circuit. The same applies if you intend to e.g. recirculate after hops have been added.
- EINBREW 3V2P supports up to two pumps up to 2.5A, which you manually activate via the Control Panel. Typically, you'd use a pump for recirculation between the Hot Liquor Tank and the Mash Tun, and sometimes also used with an external heating element. The 2nd pump can be used for moving wort between the Mash Kettle and the Boil Kettle, or vessel recirculation.
- Ensure that the 3 temperature probes provided with EINBREW 3V2P are adequately fitted. For example, it is important that you install the Mash Tun temperature probe near the point where heated liquid is fed back into the Mash Tun, and not for example after it has circulated through the mash bed or at the pump inlet. Not doing so will result in issues such as temperature overshoot and oscillation, or in the worst-case equipment damage or scorched wort. If you are using an internal heating element, do not place the temperature probe right beside it.
- EINBREW 3V2P provides precision temperature probes and control systems, and should provide excellent temperature control over a wide range of brewery configurations. However, its performance is ultimately down to the equipment you've specified. It is normal that the maintained temperature will fluctuate and you may see slight temperature overshoot when brewing. This can be exacerbated by issues such as insufficient pump flow, too large/too small heating element.
- Additional safety equipment such as installing a float switch to prevent your pump running dry and the elements operating without water added can be worthwhile additions.
- Unless you're building an off-the-shelf brewery kit, be prepared to experiment and improve your brewery as you go! It's not unusual for systems to require tweaking after first being assembled.
- For the standard internally switched model, the combined current drawn by the controller, its pumps and one active heating element must not exceed 16A. The HLT and BK heater outputs cannot operate concurrently. Include pump current when sizing the element; a 3500 W element at 230Vac leaves little current available within the 16A total. Refer to the model-specific electrical instructions for special-order relay/SSR controllers.
- Temperature probes must be placed in the vessel within the body of liquid for correct measurement of the liquid temperature.
- In a RIMS setup, the relevant temperature probe, usually the MT probe, should be placed on the output flow of the pumped liquid, so as to correctly read the temperature of the heated liquid (the probe should NOT be placed on the input side of the RIMS heater)
- In a HERMS system there can be significant time lag between adding heat to the HLT and this heat having an effect on the MT, this is a delay or lag, and can cause temperature overshoots.
- In both RIMS and HERMS, ensure the heat transfer pump is able to run and no valves are closed at all times.
- Ensure the correct temperature probes are either in the vessel being heated by the respective heater or in a vessel connected to that heated vessel by the circulator system as in a HERMS setup.

- All metal parts must be earthed, and all power supplied by a RCD RCCB, GFCI protection device(s).
- All wiring must be carried out and inspected by a qualified person.

GETTING STARTED

We know you're eager to get on with making some beer, so the first thing to do is get your EINBREW 3V2P system installed with your brewing setup!

Once you've checked you've got everything, work out where you're going to install your EINBREW 3V2P controller. Everyone's brewery is different; however, you should make sure that it is situated far enough away from your brewing vessels that there won't be any liquid splashed on the controller, or any danger of steam condensing and dripping on the controller for above.

Please also make sure that the inlet power cable for EINBREW 3V2P, the outlet power cables for the heating elements and pumps, and the temperature sensor cables will reach without being taut or presenting a trip hazard.

EINBREW 3V2P should be connected to an electric outlet suitable for the total electrical load you wish to drive, controller + heaters + pumps. The supply MUST be protected by an **RCD/GFCI/RCBO device**, for your safety – please test the **RCD/GFCI/RCBO device** before use, using the built-in test function.

IF YOU DO NOT UNDERSTAND THE ABOVE STATEMENT, PLEASE CONSULT A LOCAL EXPERT.

Once that's done you're ready to turn on! Move the power switch to the ON position and EINBREW 3V2P will power on, running through a short self-test of the onboard displays, indicators and alarm buzzer before starting. This will only take a few seconds.

When operational, EINBREW 3V2P will display the readings from the 3 temperature sensors on its displays and you can begin configuring and testing the system.

BREWING SYSTEM INTEGRATION

We know you're eager to get on with making some beer, so the first thing to do is get your EINBREW 3V2P system installed with your brewing setup!

Installing Heating Elements

The standard 3V2P-16A switches its two heating-element outlets internally. The HLT and BK C19 outlets are used one at a time and accept suitable C20 element plugs. The combined controller, pump and active-element load must remain within 16 A.

External relays or solid-state relays (SSRs) require a special-order 3V2P controller fitted with REDEL-4 heater-control sockets. These sockets are not fitted to the standard 3V2P-16A. Follow the connection and electrical ratings supplied for the specific special-order model.

Installing C20 Plug to Heating Element Leads

The standard EINBREW 3V2P connects to your heating elements using C19 power sockets. To interface with these, you need to install C20 plugs onto the power leads for each of your heating elements. If you are unsure of any aspects of how to undertake this task, please contact a competent person (e.g. qualified and certified Electrician) for advice and assistance. Miswiring a plug can be fatal. **FIRST ENSURE YOUR POWER LEAD IS NOT CONNECTED TO THE POWER SUPPLY.**

Remove the screws holding together the spare C20 plug that has been supplied with your system. Leave these carefully to one side.

Once you've done that, you'll note that there are screw terminals for Live, Neutral and Earth – along with a retaining clamp for the power cable to be inserted, to ensure that it cannot be taken out later. Unscrew the retaining clamp to allow you to feed in the power cable. Connect live, neutral and earth to the terminals marked L, N and earth on the plug, following its manufacturer's wiring instructions.

Strip back the Live, Neutral and Earth conductors to allow you to fit the exposed conductors into the appropriate screw terminals. You may need to shorten one or more of the conductors for a good fit. For safety, ensure that you only strip enough of the protective sheath to allow insertion of the relevant conductor into each of the screw terminals – no more.

Screw each of the terminals down firmly to ensure that the conductor cannot move and is securely in place, then screw down the retaining clamp for the power cable such that it is also secure.

Finally, reassemble the C20 plug using the screws from earlier, firmly screwing the plug back together.

To test, ensure that EINBREW 3V2P is turned off, then insert the assembled C20 plug with attached power cable into the C19 receptacle. Ensure that the vessel the heating element is fitted to has enough water added to at least cover the element sufficiently. Turn on the EINBREW 3V2P system, and utilise the control system to energise the heating element. You should note that the water will increase in temperature accordingly.

External relay and SSR heater connections on special order models

A special-order 3V2P fitted with REDEL-4 heater-control sockets can operate external relays or SSRs for the HLT and BK heater circuits. The sockets provide control signals; heater power is supplied through the external installation. The standard 3V2P has C19 heater outlets and does not include these relay/SSR control sockets.

The relay has x2 brown leads one is connected to the supply the other to the element, the element also needs Neutral and Earth connection, these are separate to the relay and are not provided. The Green/Yellow lead on the relay must be connected to electrical Earth. The relay's control signal connector is then connected to the panel (HLT on the left, BK on the right).

If you are unsure of any aspects of how to undertake this task, please contact a competent person (e.g., qualified, and certified Electrician) for advice and assistance. Miswiring a plug can be fatal. **FIRST ENSURE YOUR POWER LEAD IS NOT CONNECTED TO THE POWER SUPPLY.**

Relays must be mounted vertically on a non-flammable dry surface; this allows air flow through the heatsink.

To test, ensure that EINBREW 3V2P is turned off, then insert each control signal plug to the panel. Ensure that in the vessel the heating element is fitted to has enough water to cover the element. Turn on the EINBREW 3V2P system, and utilise the control system to energise the heating element. You should note that the water will increase in temperature accordingly.

Installing C14 Plugs on Pump Leads

The EINBREW 3V2P connects to your pumps using C13 power sockets. To interface with these, you need to install C14 plugs onto the power leads for each of your pumps. If you are unsure of any aspects of how to undertake this task, please contact a competent person (e.g., qualified and certified Electrician) for advice and assistance. Miswiring a plug can be fatal. **FIRST ENSURE YOUR POWER LEAD IS NOT CONNECTED TO THE POWER SUPPLY.**

Remove the screws holding together the spare C14 plug that has been supplied with your system. Leave these carefully to one side.

Once you've done that, you'll note that there are screw terminals for Live, Neutral and Earth – along with a retaining clamp for the power cable to be inserted, to ensure that it cannot be taken out later. Unscrew the retaining clamp to allow you to feed in the power cable.

Strip back the Live, Neutral and Earth conductors to allow you to fit the exposed conductors into the appropriate screw terminals. You may need to shorten one or more of the conductors for a good fit. For safety, ensure that you only strip enough of the protective sheath to allow insertion of the relevant conductor into each of the screw terminals – no more. Connect live, neutral and earth to the terminals marked L, N and earth on the plug, following its manufacturer's wiring instructions.

Screw each of the terminals down firmly to ensure that the conductor cannot move and is securely in place, then screw down the retaining clamp for the power cable such that it is also secure.

Finally, reassemble the C14 plug using the screws from earlier, firmly screwing the plug back together.

To test, ensure that EINBREW 3V2P is turned off, then insert the assembled C14 plug with attached power cable into the C13 receptacle. Ensure that the system the pump is fitted to has enough water added to operate the pump sufficiently – this is especially important if the pump will be damaged if run dry, and does not have run dry protection. Turn on the EINBREW 3V2P system, and utilise the relevant pump button to activate it. You should observe that the pump will activate.

Installing Temperature Probes to Brewing Vessels

The EINBREW 3V2P comes supplied with 3 PT100 probes to allow you to monitor and control your system.

To fit the probes into each vessel, firstly consider where you are going to place each probe. The ideal placement will vary depending on factors like the type of heating system you have chosen to use, along with other factors. Generally, the temperature probe is positioned near the bottom of a vessel, about 40/45mm from the base and at 90 degrees to the heating element.

Hot Liquor Tank (HLT) – if you are using a HERMS system, then the HLT should have a heating element fitted. It is important not to install the temperature sensor too near the heating element, as this can produce readings which are artificially high and prevent the control system from operating correctly. A good place may be close to the heat exchanger coil that is used to supply heat to the Mash Tun. If you are using a RIMS system, the temperature sensor should be placed in the area of the RIMS outlet into the vessel, in order to monitor the output temperature of that system.

Mash Tun (MT) – In a HERMS or RIMS system the Mash Tun will be indirectly heated by the HLT. As such, the temperature sensor should probably be placed around bottom inlet for the circulation pump, if utilised. If a RIMS system is being used to heat the MT, then fit the sensor downstream of the heated water outlet to the MT. If the MT has an element, then fit the probe in the MT.

Boil Kettle (BK) – normally the Boil Kettle will have a direct heating element fitted. It is important not to install the temperature sensor too near the heating element, as this can produce readings which are artificially high and prevent the control system from operating correctly. Around the middle of the vessel may be a useful place to site the probe.

Extending the EINBREW 3V2P C19 power lead

The EINBREW 3V2P comes supplied with a 2m power lead. However, you may find this is insufficient for your purposes. If this is the case, please extend the cable using a suitable extension cord, or purchase a longer power lead.

Please note any replacement/extension must be capable of handling sufficient current. If using a wound extension cord, please ensure that it is fully unwound before use to allow it to handle its maximum rated capacity. Not doing so will reduce the current capacity of the cable and may result in fire or death.

Replacing user-replaceable fuses

There are two user-replaceable fuse receptacles mounted on the base of the enclosure. If you believe that these fuses have blown, these can be replaced. Please ensure to replace them with an equivalent specification of fuse.

To replace, first ensure that you have turned off EINBREW 3V2P by disconnecting it at the plug. This will ensure the system is isolated. Then use a screwdriver to access the fuse compartments, and replace the damaged fuses. If capable, you may wish to use a e.g., multimeter to test if the fuse(s) are actually damaged or not, as the fault may lie elsewhere.

Insert the new fuse(s) and screw in the fuse compartment again. Then reconnect the system to mains electrical supply, and test the system to ensure that it operates correctly.

Drilling Holes in Stainless Steel Vessels for Heating Elements and/or Temperature Probes

Depending on which vessels you are using in your system, you may already have holes pre-drilled for heating elements and water pump inlet/outlets – this makes things very convenient as you can simply use those for installation, as long as they're in the right place!

However, if you are building a system without any of this work carried out, you will have to undertake the work yourself.

Firstly, confirm that you have appropriate drill bits (or hole saws, etc) and drill (available speed, etc) for the job of creating these holes. You will likely require special drill bits, and depending on the grade and thickness of the stainless steel, you may require non-standard and/or higher speed drill drivers also. If you do not have experience in this work, you would be advised to contract a specialist metal worker to help, as it can be easy to damage or cosmetically mark your vessels.

Next, mark out the holes in the design to ensure that placement of the new equipment is correct. Then create the hole. After the metal has cooled down afterwards, fit the elements and probes as necessary. Ensure that the vessels are well cleaned afterwards to ensure that no metal shavings or dust get into the brewing system during use.

Mounting the Control Panel

The panel must be mounted vertically. There are mounting holes in tabs on the corners of the enclosure, these are used to mount the panel. During use the rear of the panel can get hot, this is normal. It is vital that a gap be left between the rear and the mounting surface, to allow airflow, the outward dimples are to facilitate this. It is also vital that the mounting surface can withstand temperatures of up to 50C. Ensure that you do not over-tighten the 4 mounting screws and bend the tabs, the tabs should remain vertical like the rear of the control panel. Do not mount the panels near or over vessels or indeed near any heat source. Ensure that there is plenty of ventilation around the panels and the air can move around rear (do not set items on top of the panel, which may restrict air flow). Ensure cables and leads are kept cool and dry. Ensure the panel does not become moist. If

condensation forms on the panel, you must stop using it immediately, and turn off the power remotely.

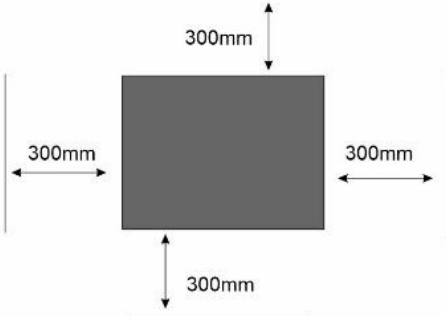
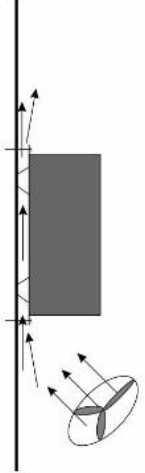
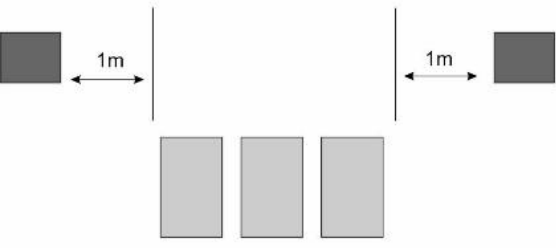
Mounting external relays and SSRs on special order models

For a special-order controller with REDEL-4 heater-control sockets, **the relay (and heatsink) must be mounted vertically to allow for maximum cooling.** There are mounting holes on each side of the relay heatsink. During use the heatsink may become warm, this is normal. It is vital that the mounting surface can withstand temperatures of up to 50C. Do not mount the heatsinks one above the other. They should be mounted side by side. Do not mount these over or near the vessels, or not near any other heat source. Ensure that air can flow over and around the heatsink, do not set item on top of the heatsink.

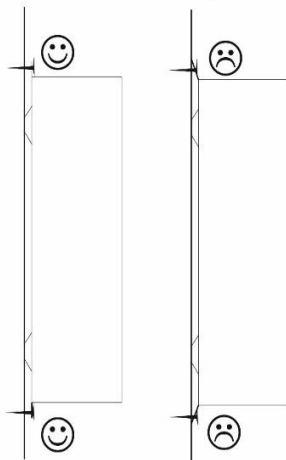
25A relays (SSRs) are normally wired with 4mm² cables, either single core or multicore. Single core 4mm² may be capable of 30A to 37A, please consult a local expert, **this wiring must be protected by conduit, trunking or by the manner of its mounting.** 4mm² tri-core cables are only generally capable of around 20-25A, but this will depend on the nature of the mounting of the cable.

40A relays (SSRs) are normally wired with 6mm² single core capable of 40A, please consult a local expert, **this wiring must be protected by conduit, trunking or by the manner of its mounting.**

To minimise heating and maximise current carrying ability, single core wires should not be bundled together. All cable must be safely mounted in accordance with local or national standards. All metalwork must be earthed. The Brown wire is the 'live switch' wire. For single core wired SSRs you will need to supply a neutral return wire capable of carrying sufficient current and an Earth/Ground wire. It is not recommended to open the relay cover. The live switch wire must be protected from being pulled or stressed. It is advised to always use the shortest lengths of wire possible and never to coil or loop wires, always cut them to the correct shortest uncoiled lengths needed. A viewing hole is positioned to see if/when the relay is being drive ON by the controller. All wiring must be checked by a suitably qualified installer electrician. Do not allow any wires and cables to sit on or touch the relay and heatsink assembly.

Minimum distances to nearest surface. 	 Air must be able to flow freely between the rear of the panel and the mounting surface. In warmer climates or on warm days you may have to use a fan to force better movement of air.
Do not mount directly above vessels. 	

Side view of mounted panels

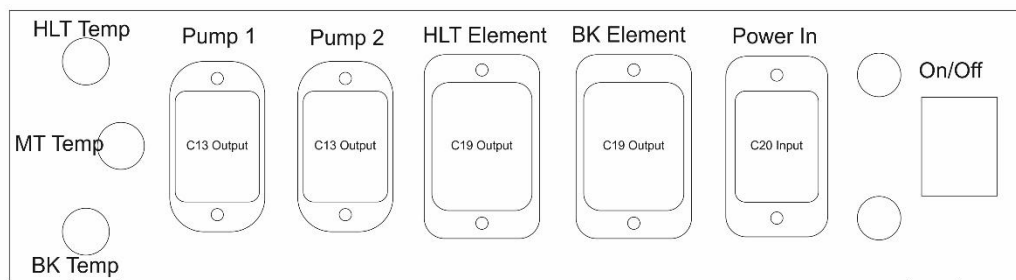


Basic System Testing

Once you've installed all your heating elements, pumps and temperature probes – it's time to test everything out before properly brewing wort!

Underside view of 3V2P panel

Front of panel



Rear of panel

Connect up everything to EINBREW 3V2P, and add some water into each of the 3 vessels. The water level will need to be sufficient to cover the elements and to correctly fill the circulation system(s).

The first thing to try is to activate each pump in turn. Ensure the correct valves are in the correct orientation open/closed as required. Press the P1 and P2 buttons on the interface respectively to drive each pump in turn, if you have enabled Pump Vent, then the pump will pulse on and off a few times before remaining on. Confirm that it is operating correctly, and flowing well. Also ensure that there are no leaks coming from any pipework! If there are any leaks that look as if they may contact with electrical connections, disconnect the power to your system immediately.

Once the circulation system seems to be working OK, activate the Pre-Heat/Mash In stage and confirm that the heating system/heat exchanger is warming the HLT and/or MT as expected. It will take time for the temperature to increase, so do not expect an instant ramp to your set temperature. Take care to look for any leaks as time goes on. You may find that you need to tighten connectors, add washers, etc. before everything is completely watertight.

Next move onto the Boil stage, and test the heater in the Boil Kettle. Again, you should see the temperature rising in the vessel when activated.

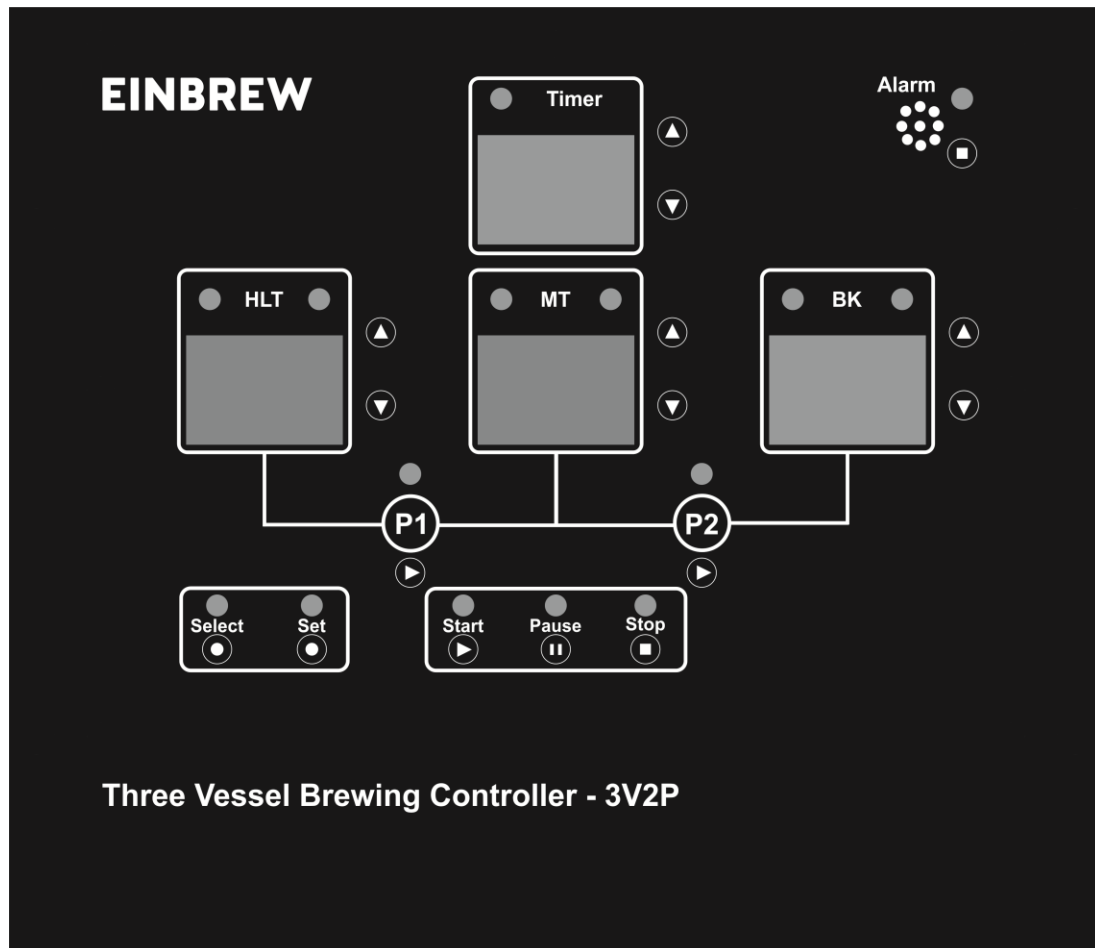
When testing, make sure that the temperature probes have been connected to each vessel correctly – for example, that the Boil Kettle probe has not been connected to the Hot Liquor Tun, or similar. Also make sure that the heating elements and pumps turn on appropriately, and they haven't been connected to the wrong sockets.

After you've carried out the basic tests, dispose of all the water from the system in case there is any loose debris or other material present. Then you're ready to brew for real!

CONTROL PANEL

Before beginning to make your brew, let's go through the main control panel. EINBREW 3V2P is designed to be very similar to a traditional brewery control system, with separate temperature monitoring for each vessel in the system.

Our diagram of the front panel below illustrates some of the options available.



Control Section	Explanation
Timer	Allows you to set the time for up to 9 (nine) Mash Steps and the Boil duration, along with 9 Hop Insertion times and alarms. The Up/Down buttons will allow you to increase/decrease the presently displayed time. You can also press and hold the buttons to go to the highest/lowest value (or OFF if available). The Time displayed will depend on the particular Stage/Step you're in. The red indicator for this section will be lit when the Timer is active. Any changes made will be automatically stored in the 3V2P memory.

Control Section	Explanation
HLT Hot Liquor Tank	Displays the Measured Temperature on the top half, and the Set Temperature on the bottom half of the display. The Up/Down buttons will allow you to increment and decrement the presently displayed set temperature. This temperature is used for preheating, so only a single temperature will be displayed/set. The Green indicator will be lit when the Preheat stage involving the HLT is active, changed using the Select button. The Red indicator will be lit when the stage is running and the heater has been turned on. Any changes made will be automatically remembered.
MT Mash Tun	When the Mash Stage is inactive, the display automatically alternates between: 1) Displaying the Measured Temperature on the top half of the display, and the Set Temperature for the presently selected Mash Step on the bottom half. 2) Display the Mash Step on the top half (St 1 to St 9) of the display, and the Set Temperature for each Mash Step 1-9 on the bottom half. When the Mash Stage is active, the display shows the Measured Temperature on the top half of the display, and the Set Temperature for the presently selected Mash Step on the bottom half. The editable Mash Step time will be displayed on the upper Timer display, with the Step label below (St 1 to St 9) and can be adjusted there. The Up/Down buttons will allow you to increment and decrement the presently displayed set temperature. You can also press and hold the buttons to go to the highest/lowest value, or OFF if available. To switch between the different Mash Step timings, when the MT stage is active, press the Set button. The display will go through Mash Step 1 to Mash Step 9, and back to Mash Step 1 each time Set is pressed. If you do not want to use Mash Steps 2–9, set its time to OFF; Mash Step 1 can be set to 0 minutes but cannot be OFF. Please note that Mash Steps set to 0 minutes will change the set temperature for the brew accordingly when they're triggered, but will not run for any time when the set temperature is met. The Green indicator will be lit when the Mash Stage is active, changed using the Select button. The Red indicator will be lit when the stage is running and the heater has been turned on. Any changes made will be automatically remembered.

Control Section	Explanation
BK Boil Kettle	Displays the Measured Temperature on the top half of the display, and the Boil Power Percentage on the bottom half (e.g. "P50" = 50% Power). This determines how much power is put into the system after boil has been detected, and allows you to control how vigorous the boil will be. The Up/Down buttons will allow you to increment and decrement the presently displayed Boil Power Percentage in 10% steps. The editable Boil time will be displayed on the upper Timer display and can be adjusted there. To switch between the different Hop Insertion timings, when the BK stage is active, press the Set button. The display will go through Hop Insertion 1 to Hop Insertion 9 on the bottom half of the timer display above (HOP1 to HOP9), and go back around to Boil Power Percentage, each time Set is pressed. If you don't want to trigger a particular hop insertion, set the time to be OFF (go to 0 minutes, then press Down again so the display changes to OFF). Please note that Hop Insertions set to 0 minutes will be triggered when boil runtime begins after detection or bypass. The Green indicator will be lit when the Boil Stage is active, changed using the Select button. The Red indicator will be lit when the stage is running and the heater has been turned on. Any changes made will be automatically remembered.
P1 Pump 1	Press the P1 button to turn Pump 1 on and off. If startup ventilation is enabled for this pump in the Maintenance options, the pump will pulse on and off before steady running. The button must be held down for approximately a second before it will activate. The red indicator follows the pump output: it flashes with ventilation pulses, then remains on during steady running. Please note that the pump is manually controlled using this button – it will not generally be switched on or off automatically. The exceptions are if you press and hold the Stop button or reach the end of the Cooling phase, all pumps will be turned off. <u>Pump 1 will be temporarily turned off during Grain Rest intervals if it is selected as the Mashing Pump (default).</u> If Pump Exclusion is turned on, activating Pump 1 will automatically deactivate Pump 2.

Control Section	Explanation
P2 Pump 2	Press the P2 button to turn Pump 2 on and off. If startup ventilation is enabled for this pump in the Maintenance options, the pump will pulse on and off before steady running. The button must be held down for approximately a second before it will activate. The red indicator follows the pump output: it flashes with ventilation pulses, then remains on during steady running. Please note that the pump is manually controlled using this button – it will not generally be switched on or off automatically. The exceptions are if you press and hold the Stop button <u>or reach the end of the Cooling phase, all pumps will be turned off</u>. Additionally, it will be temporarily turned off during Grain Rest intervals if it is selected as the Mashing Pump. If Pump Exclusion is turned on, activating Pump 2 will automatically deactivate Pump 1.
Select Brewing Stage Button	This button will cycle through the available brewing stages – Preheat/Mash In (HLT section), Mashing (MT section), Boiling (BK section) and Cooling (BK section). The green indicator will light on the HLT, MT and BK sections as you cycle through the stages. For Cooling, none of the indicators will be lit and 'COOL' will be displayed on the Timer.
Set Set Button	This button has different functions depending on the presently selected Brewing Stage. When a Brewing Stage hasn't been started, it'll allow you to configure your EINBREW 3V2P system as follows: 1) In Preheat/Mash In Stage (HLT section), pressing Set will bring up the Configuration Menu. Please see this section for more information. 2) In Mashing Stage (MT section), pressing Set will cycle between the different Mash Steps, allowing you to set the time and temperature for each. 3) In Boiling Stage (BK section), pressing Set will cycle between the Boil Time and Power, and Hop Insertion 1 to 9 Time. 4) In Cooling Stage (BK section) the Set button has no usage. During active boil runtime, pressing and holding Set saves the current Boil Control percentage as the future default; during boil preheat, it bypasses detection. Check the displayed power before saving, especially after pump ventilation. The system will beep twice when it has been saved.
Alarm	The Alarm light and sounder will be triggered when an alarm condition is met. Typically, this will light and sound at the end of each of the Stages (Preheat/Mash In, Mashing, Boiling, Cooling). It may also sound in other scenarios, for example just before the boil, or if an error has occurred with a Temperature probe. To acknowledge the Alarm and turn it off, just press the Alarm button.

Control Section	Explanation
Start	Pressing Start will begin the presently selected Brewing Stage. The button must be held down for approximately a second before it will activate. Preheat/Mash In – preheat to the selected temperature and end the stage. Mashing Stage – run through the Mash Steps in sequence, heating to the preset temperature then running for the set time. Please note that the system will start with the presently selected Mash Step, so make sure you're on Step 1 if you want to run through Step 1-9! Boiling Stage – heat until boil is detected (or bypassed), then run the timed boil with BK power control. Cooling Stage – alarm once the wort is cooled to the selected temperature. Relies on manual cooling system. When a stage is running, the green Start indicator is lit. HLT and MT temperature setpoints can be adjusted with their vessel arrows where applicable; Timer arrows adjust the selected stage time. During active boil, BK Up/Down adjusts element power in 10-percentage-point steps, not a boil-temperature setpoint. The stage will automatically end once the preset parameters have been run through. At the end of each stage, you manually move to the next by pressing the Select button and pressing Start again. NOTE the controller will maintain the mash-in and mash-out temperatures for a period of 10 minutes after the stage end, after this 10-minute period the heater control will be turned off. If you wish to re-establish the set temperature, please use the select and set buttons to scroll round to the start of the relevant stage and press start.
Pause	You may Pause a Stage when it's running. This will stop any timers that are running, as well as stopping the heaters. The Orange indicator will be flashing when the stage is paused. The button must be held down for approximately a second before it will activate. This would most commonly be used if there's a temporary issue with your brewing system that you need to address before progressing forward. To restart the Stage, either press Pause again or press Start. The Stage will pick up where it left off.
Stop	If you encounter a problem with your brewing system (or you decide that you wish to end the present stage prematurely), you can press and hold Stop to completely stop and cancel the present Brewing Stage. The button must be held down for approximately a second before it will stop, to prevent accidental activation. This will reset the stage timers and progress, stop the pumps, and stop the heaters. When you have stopped, you can go ahead and reconfigure the brewing recipe, or go and select and start a Brewing Stage again.

CONFIGURATION MENU

EINBREW 3V2P has a number of configuration options you can customise your system. These settings are not normally changed beyond the initial configuration of EINBREW 3V2P.

To enter the Configuration Menu, ensure that EINBREW 3V2P is stopped, then ensure that the Preheat/Mash In Stage (HLT) is selected. Then press the **Set** button once. The menu option will appear on the upper Timer display, with its value on the lower display – use the Up/Down buttons on the Timer to navigate between the menu options, and press the **Set** button again to select.

When you select an option, you will be presented with a value – press the Up/Down buttons on the timer to change it, and press the **Set** button again to save it. If you do nothing, the menu will automatically time out and EINBREW 3V2P will return to normal operation.

Additional configuration options are also available in the **Maintenance Menu** section. This provides access to settings that do not normally need to be changed.

Menu Option	Default	Min	Max	Explanation
P01 unit Temperature Units	Celsius	N/A	N/A	Toggle the Temperature Units between Celsius and Fahrenheit. All displayed values and settings will be converted accordingly after switching.
P02 PE Pump Exclusion	No	N/A	N/A	Turn Pump Exclusion On or Off. When this feature is set to 'yes', both pumps cannot be active at the same time. If you turn on a Pump whilst the other is turned on, the previously activated Pump will be automatically deactivated.
P03 P1t Maximum Pump 1 Temp.	93° (C)	0° (C)	105° (C)	Set the Maximum Pump 1 Temperature. The pump is blocked or turned off when the highest HLT, MT or BK reading is at or above this limit. Protection is enabled by default at P18.
P04 P2t Maximum Pump 2 Temp.	93° (C)	0° (C)	105° (C)	Set the Maximum Pump 2 Temperature. The pump is blocked or turned off when the highest HLT, MT or BK reading is at or above this limit. Protection is enabled by default at P23.
P05 Er Enable Grain Rests	Yes	N/A	N/A	Enable the Grain Rests during Mashing (pump is automatically turned off to let the wort run through the grain and prevent grain compaction)
P06 rL Grain Rest Length	1 min	1 min	10 min	Length of each grain rest during Mashing. The P09-selected pump and heating are temporarily turned off. Values are minutes.
P07 rP Grain Rest Period	5 min	1 min	20 min	Delay between grain rests during Mashing, counted after the previous rest ends. A rest may be deferred near the mash setpoint when P24 inhibition applies. Values are minutes.
P08 BAL Boil Alarm Level	95° (C)	80° (C)	105° (C)	Set the Temperature Level that the system will alarm on the way to the Boiling Point. This allows you to prepare any necessary Hops for insertion, or observe the wort as it comes to the boil to ensure that it isn't too vigorous.

Menu Option	Default	Min	Max	Explanation
P09 P Mashing Pump	P1	N/A	N/A	Select if Pump 1 or Pump 2 is utilised for recirculating wort around the Mash Tun. This controls which pump will be affected by Grain Rests, if enabled.
P10 tPo1 HLT Probe Offset	0.0° (C)	-2.0° (C)	2.0° (C)	If you would like to alter the temperature reading to match another probe you are using for reference, you can utilise the Temperature Probe Offset setting to do so. This should not normally be required.
P11 tPo2 Mash Probe Offset	0.0° (C)	-2.0° (C)	2.0° (C)	If you would like to alter the temperature reading to match another probe you are using for reference, you can utilise the Temperature Probe Offset setting to do so. This should not normally be required.
P12 tPo3 Boil Probe Offset	0.0° (C)	-2.0° (C)	2.0° (C)	If you would like to alter the temperature reading to match another probe you are using for reference, you can utilise the Temperature Probe Offset setting to do so. This should not normally be required.
rST Reset	N/A	N/A	N/A	Select YES to reset all parameters to their factory default values.
End Exit Menu	N/A	N/A	N/A	Exit the Menu.

PREPARING FOR BREWING

EINBREW 3V2P lets you focus on what you do best – brewing beer! It'll take care of the temperature control and timing on your bespoke 3-vessel system, along with all the electrical control. All you have to do is enter your recipe!

Before brewing, please ensure that you've sterilised/sanitised all your equipment – this will help prevent infection.

This is also a good point to ensure that you've connected everything you need to EINBREW 3V2P, and that all electrical connectors are firmly seated. Ensure that the 3 Temperature Probes are connected and that their readings appear to be correct.

For demonstration purposes we'll go through the process of entering and brewing a single recipe.

Entering your Recipe

The last step before you start brewing is to enter your Recipe into EINBREW 3V2P! We'll take an example recipe below with timings and temperature for each stage, and show you how to enter it.

Stage	Temperature	Time
HLT Hot Liquor Tun/Preheat/Mash In Stage	39°C	N/A
MT Mash Tun/Mashing Stage		
Mash Step 1	52°C	5 minutes
Mash Step 2	62°C	30 minutes
Mash Step 3	72°C	20 minutes
Mash Step 4	78°C	15 minutes
BK Boil Kettle/Boiling Stage	Auto	70 minutes
Hop Insertion 1	-	0 minutes
Hop Insertion 2	-	30 minutes
Hop Insertion 3	-	70 minutes
Cooling	21°C	-

As we can see, this recipe has 4 mash stages and 3 hop insertions. Up to 9 mashing stages and 9 hop insertions are supported, although of course you can always manually control the system to do additional steps if needed.

Ensure that the **Stop** indicator is lit before entering the recipe settings – if you've just turned on the system, you'll not have to worry about doing anything.

Setting Preheat/Mash In Stage

Ensure that the green indicator above the **HLT** section is lit, signifying that we're setting up the Preheat/Mash In Stage. The **Timer** section will also display 'PrEH'. Then use the Up/Down buttons on the **HLT** section to adjust the temperature to 39°C. At the end of preheat stage the controller has a 10 minute keep warm function, where it will control the heating element to keep the liquid at the set temperature for a period of 10 minutes – IT IS IMPORTANT to ensure that the element is covered and if you are running any pumps for heat exchange, these pumps **MUST** be kept running!

Setting Mashing Stage

Then press the **Select** button to move to the **MT** section, for setting up the Mash Tun/Mashing Stages. The green indicator for this section should be lit. The bottom half of the **Timer** section should be displaying 'St 1' to indicate Mash Step 1 – if it does not, press the **Set** button until the display cycles around to 'St 1'. Use the Up/Down arrows in the **MT** section to set 52°C, and use the Up/Down arrows in the **Timer** section to set 5 minutes. Then press the **Set** button again to move to Mash Step 2 – the bottom half of the **Timer** section will display 'St 2'. Set the temperature and time again for Mash Step 2, and repeat for Mash Stage 3 and Mash Stage 4.

When you move to Mash Step 5, since we aren't actually utilising this Step, we'll do something slightly different. Use the Down arrow in the **Timer** section to reduce the time to 0 minutes, then press the Down arrow again so that the display shows 'OFF' where it previously indicated the time. This signifies that Mash Step 5 will not be used. Do the same for Mash Step 6-9.

Mash Step 1 cannot be set to OFF, although it can be set to 0 minutes. Mash Steps 2–9 can be set to OFF when not needed; a 0-minute step remains enabled and changes the set temperature without running a timed hold. It's important to note that the system will start off with whichever Step you have currently selected – so make sure you have Mash Step 1 selected before pressing **Start** if you're running all the Mashing Steps! At the end of mashing the controller has a 10 minute keep warm function, where it will control the heating element to keep the mash at the final mash step temperature for a period of 10 minutes – IT IS IMPORTANT to ensure that the element is covered and if you are running any pumps for heat exchange, these pumps **MUST** also be kept running!

Setting Boiling Stage/Automatic Boil Detect

Press the **Select** button again to move to the **BK** section, for setting up the Boil Kettle/Boiling Stage. The green indicator for this section should be lit, and the lower half of the timer display should show 'BOIL'. If it doesn't, press the **Set** button to cycle through the Hop Inserts until this is displayed.

Use the Up/Down arrows in the **Timer** section to set the Boil Time to 70 minutes, and use the Up/Down arrows in the **Vessel** section to set the Boil Control Power. You might want to experiment with which Control Power setting gives you the most appropriate boil level – you can change it on the fly later on, but we default to 30% to start with to reduce the risk of the wort boiling or frothing over. The best setting to use will depend on your system and heating method, and how vigorous a simmer/boil you want. When you're running the Boil Stage, use the Up/Down arrows to control the power on the fly when you've reached boiling point, and press and hold the **Set** button until you hear two beeps to save it to memory.

The 3V2P uses a unique Boil Detection feature to determine when the wort has reached its boiling point, so you don't need to set a boil temperature! It'll work it out for you. It'll also alarm at the Boil Alarm Level you've configured (95°C by default) to give you a chance to prepare your hops and monitor the start of the boil.

If boil is not detected, or detection is too late for your requirements, press and hold Set during boil preheat to bypass detection and enter the timed boil. The BK Up/Down buttons then adjust boil power.

Setting Hop Insertions

After setting up the Boiling Stage, we can setup the Hop Insertions. Press the **Set** button and the lower-half of the Timer display will change to 'HOP1'. We can then use the Up/Down arrows on the Timer section to set the time at which the Hop Insertion should occur.

If you set 0 minutes, the Hop Insertion will activate when boil runtime begins after automatic detection or a manual bypass. As with the Mash Steps, if you press the Down arrow again when on 0 minutes you can set the Hop Insertion to OFF.

In this case we want to set Hop Insertion 1 to 0 minutes so that it activates immediately, then press the **Set** button again to move to HOP2 – set this to 30 minutes. Repeat this again to set HOP3 to 70 minutes, then cycle through the rest of the Hop Insertions and set them to OFF since we're not using them.

Setting Cooling Stage

Select the Cooling Stage; the HLT, MT and BK stage indicators should be off. The **Timer** section will also display 'COOL'. Then use the Up/Down buttons in the BK section to adjust the cooling target to 21°C. You will need a cooler or heat exchanger in a pump circuit for cooling to work. When you enter the cooling stage, turn on the cooler or start the coolant flow and manually start the required pump; the system will turn both pump outputs off and sound an alarm when the cooling target is reached.

BREWING WORT

For demonstration purposes we'll go through the process of entering and brewing a single recipe.

Pre-Heat/Mashing In Stage

Now that you've entered your recipe, you're ready to start! Add your water to the Hot Liquor Tank and Mash Tun as necessary for your system, and press the **Select** button until the **Pre-heat/HLT** section is selected. Confirm that the temperature displayed is correct, and press the **Start** button to begin!

The heater will automatically operate until the HLT temperature matches the one you've set. If you need to, you can use the Up/Down buttons in the **HLT** section to change the set temperature dynamically.

IMPORTANT: You must manually start the Pumps during brewing. This is especially important if you are using a RIMS system, as it can be dangerous to operate the heater without the pump and water circulation.

Once the temperature has been reached, the bottom half of the timer display will indicate 'END', and the alarm will sound. Press the **Alarm** button to silence the alarm.

You can now add your grain to the Mash Tun.

Mashing Stage

Press the **Select** button until the **MT** section is selected, then press the Start button. EINBREW 3V2P will automatically run through the Mashing Steps that you've setup previously. You'll see that the indicator will heat through each temperature step, and once that's reached the timer will start counting down.

The **Timer** section will show you the remaining time in the top half, and alternate between showing you the Mash Step (St 1 to St 9) and the total time you've set for the Step in the bottom half. If you need to, you can use the Up/Down buttons in the **Timer and MT section** to change the set time and temperature dynamically.

Once all the steps that you've setup have been completed, the bottom half of the timer display will indicate 'END' and the alarm will sound. Press the **Alarm** button to silence the alarm.

The grain can now be removed from the Mash Tun.

Boiling Stage / Automatic Boil Detect

Press the **Select** button until the **BK** section is selected, then press the Start button. EINBREW 3V2P will automatically start heating the wort to the boiling point and 'Auto' will be displayed in the

Temperature area; and then once boil has been reached the timer will appear and start counting down.

Our unique Boil Detect feature will automatically work out when the boil has been reached by examining the temperature profile of the wort, and sound an alarm to let you know. It'll also alarm at the Boil Alarm Level you've configured (95°C by default) to give you a chance to prepare your hops and monitor the start of the boil.

If boil is not detected, or detection is too late for your requirements, press and hold Set during boil preheat to bypass detection and enter the timed boil. The BK Up/Down buttons then adjust boil power.

Once Boil has been detected you can use the Boil Temperature Up/Down arrows to change the Boil Control Power dynamically – you'll need to experiment to see what's best for your system, depending on how strong a boil you want, from vigorous to gentle simmer! We default to 30% to start with to reduce the risk of the wort boiling or frothing over, and you can modify that in 10% steps. During active boil runtime, holding Set saves the currently displayed power as the future default. Check the displayed value before doing so; holding Set while P00 is displayed saves a zero-power default.

If you've selected to have Hop Insertions as per our example, then when they're triggered the Timer display will show the hops to insert – e.g. HOP1 will be shown right at the start. When this is displayed, the Alarm will also sound. Press the **Alarm** button once to acknowledge that you've inserted the hops, and the display will return to normal.

If you've configured multiple hops to be inserted at the same time, or if you missed an earlier alarm and more have triggered, you'll need to press the button once to acknowledge each insertion in turn.

Once the boil timer has completed, the bottom half of the timer display will indicate 'END' and the alarm will sound. Press the **Alarm** button to silence the alarm. The heater will be automatically turned off.

Cooling Stage

Press the **Select** button until COOL is displayed in the Timer section and all the other section indicators are unlit, then press the Start button. EINBREW 3V2P will monitor until the temperature you've setup previously has been reached, whilst you engage your active cooling system. When the desired temperature is met, and alarm will sound, the Pump will turn off if it's running, and you can shut down your cooling system and transfer the wort to a fermenter.

Brew Complete!

You've now finished your first batch of wort with EINBREW 3V2P! You can now switch it off, or if you have e.g. a controlled pump setup to help pump out to fermenters, manually use that to help you finish it off.

Cleaning

One last thing to take care of - cleaning! It's important to clean immediately after brewing, as leaving it as-is will encourage growth of mould and other unpleasant effects. Whilst EINBREW 3V2P doesn't have any built-in cleaning functions, you can use the pump control and the heating control to help you clean up – for example, you could set the Preheat/Mash-In Stage temperature to 99°C to heat a smaller amount of water to sterilise with.

TROUBLESHOOTING

- Controller is beeping
 - It is alarming because a control stage has ended in the process (e.g., Mash In, Mashing, Boiling) and human intervention is required to proceed. Alternatively, this may be informational, e.g., reaching the pre-set Boil Alarm Level, or a Fault may have occurred. Press the Alarm button to cancel the alarm.
- Turning the Control Panel On/Off
 - Use the dedicated on/off switch to turn the Control Panel On/Off.
- Control Panel does not turn on
 - Please ensure that the power inlet cable is inserted securely, and the supplying power socket is turned on.
 - If using an **RCD/GFCI/RCBO device** as recommended, please ensure that it is activated and not in TEST mode. It will not provide power in this state.
 - Please check that the fuses (accessible via the external fuse holders) have not blown. Ensure that the system is disconnected from mains electricity whilst removing or replacing the fuses.
- Brew taking a long time to reach Set Temperatures
 - It can be normal for it to take a reasonable length of time to preheat to temperatures. How long will depend on your system – how much water, and how powerful the heating elements are – it can be typical to find an increase in temperature of 1°C every 1 minute. This will differ depending on the ambient temperature, and if you have the lid on the vessels being heated on or off. Also, the higher the temperature, the more heat losses will occur – it will be slower to transition from 90°C to 100°C, than 20°C to 30°C. Adding insulation to the vessels may help, or adding a more powerful heating element.
 - When cooling, for example using cold water, the temperature drop will typically be very quick at the start and become progressively slower as your wort temperature nears the temperature of your cooling medium. This means that it may take a long time to achieve your required cooling temperature – or if it's set too low and your cooling medium is too hot, you may never reach it. If cooling has ceased before your set point, you may need to e.g., use ice baths or similar methods to cool further, or consider an active cooling system such as a glycol chiller.
- The Brew Temperature changes a lot when trying to maintain temperature
 - It is normal that there will be some variation in temperature. Typically, you will see a small overshoot when trying to obtain a particular set temperature, and may see some oscillations below and/or above the set temperature when controlling. This is to be expected, and totally normal. How much this occurs is entirely down to your system, and will depend on things like volume of water, element size, and vessel insulation – and also the set temperature, as you will have bigger ambient losses at higher temperatures.

- If you are seeing larger swings than you would like, there are some things you can do to improve system stability.
 - Ensure that you keep the lid on at all times. Continually removing and replacing the lid will cause fluctuations in temperature.
 - Add insulation to the vessel. This will help to remove ambient losses and make things more stable.
 - Ensure that you are using a recirculation pump with good flow to ensure that the water is well-mixed. This will help the control system do its job.
 - Consider if where you have positioned the temperature probe is appropriate – for example, if it is very near the heating element, it will read an artificially high temperature when the heater is running.
 - As Grain Rests in Mashing turn off the pump, there will be temperature fluctuations whilst the pump is off, and immediately after turning it back on, as the system temperature equalises again.
- Error Indicators
 - If you see an unusual temperature reading, this may be due to an incorrectly placed, incorrectly connected or damaged temperature probe.
 - If the Measured Temperature display is showing 'ERR', this means there is a problem with the temperature probe. Please ensure that it is connected correctly. It may also provide an error code – e.g., 'Err1'. Please communicate this to Support if you cannot resolve yourself. If a momentary error occurs but it recovers, this may only be displayed briefly.
 - If a persistent Temperature Probe error occurs whilst a Stage is actively being controlled, the system will automatically go into Pause mode to prevent overheating. The timer display will indicate 'FT' along with error codes rather than 'PAUS' on the bottom half to indicate this. 'Err' with a fault number may also be displayed on the temperature probe reading. Until this error is resolved, you will be unable to restart the control process for safety reasons.
 - If the fault does not go away on its own, try resetting the power on the system to see if that clears it.
 - Please note any information and communicate it to Support if necessary. For example, did it occur at the same time as the Pump or Heater was activated, or any other potentially relevant data.
- Pump does not operate
 - This may be due to the pump inlet getting clogged by debris. Please check that the filter for the inlet is not covered and remove any debris.
 - Check that you have selected the correct pump. Its red P1/P2 indicator follows actual pump operation: with startup ventilation enabled, it goes on and off with the pump pulses, then remains on during steady running. Ventilation can be enabled or disabled

- separately using the Pump 1 and Pump 2 Ventilation settings in the Maintenance options. An illuminated indicator does not by itself prove that liquid is flowing.
- Ensure that you are operating the correct pump, and that any relevant valves are open.
 - If Pump Exclusion is turned on in **Configuration Menu**, then turning a pump on will automatically turn off the other one. If you need both pumps on simultaneously, please change this in **Configuration Menu**.
 - Boil power shows P00 after a pump has been started
 - If the selected pump is allowed by its maximum-temperature protection and startup ventilation is enabled, it pulses on and off when first started. During active boil this temporarily inhibits heating and sets the live BK power display to P00. P00 remains after the pump reaches steady running. Once ventilation has finished, use BK Up to restore the desired boil power while leaving the pump running. Do not hold Set at P00: during active boil that saves P00 as the future boil-power default. Grain Rests and Mashing Pump settings do not govern this startup ventilation behaviour.
 - Power Failure during Brewing Process
 - If a power failure occurs, please switch off EINBREW 3V2P at the plug.
 - Once power has been restored, turn on EINBREW 3V2P again. Depending on the duration of the outage, you may be able to pick off close to where you left off.
 - Move to the relevant Brewing Stage and confirm that the time/temperatures are correct. Depending on when the power cut occurred, you may need select the appropriate Mashing Step to start with, to get to where you were again quickly. You should also reduce the time for that stage to reflect the time remaining at that temperature level. Once you're ready, press the **Start** button to commence.
 - If the outage has been for a substantial period of time, you may need to adjust your recipe accordingly to compensate, or unfortunately dispose of the batch of wort.
 - Boil Temperature is detected early or late by Boil Detect
 - Please ensure that you don't do anything to cause a temperature disturbance coming up to the boil, e.g., lift the lid when you're close to the boiling point – this can potentially cause a false positive detection due to the temperature profile change.
 - If the boil is too weak, use the BK Up button to increase the Boil Control Power, allowing time for the kettle to heat. Reduce the power after a suitable boil is reached.
 - To bypass Boil Detection during boil preheat, press and hold Set. During the timed boil, a long Set press instead saves the displayed boil power as the future default.
 - If the problem persists, please note any information and communicate it to Support if necessary.
 - System continually resets itself
 - Ensure that the power lead is firmly plugged in. Consider replacing the main power lead with an alternative, to ensure that it is not faulty.
 - If you are having regular power fluctuations at your premises, this may be causing resets due to low supply voltage. Please contact your electricity company to report the fault.

- Check to see if the reset occurs at particular times, e.g., when you are turning the Pump on/off, or the heater on/off, or something else.
 - If the problem persists, please note any information and communicate it to Support if necessary.
- I've changed a menu parameter, and the system isn't working as well as it did anymore!
 - You may have inadvertently made a change that has caused something to go wrong. To correct this, you can go into the **Configuration Menu** and select the Reset (rST) option. Select it, then press **Timer Up/Down** to show and then select Yes. All options (including recipe settings) will be reset to factory defaults.
 - You can also reset your parameters and recipe settings by holding down **Pause** and **Stop** when powering up the system – you will hear 2 short beeps to acknowledge the reset, then the rest of the startup sequence will continue as normal.

MAINTENANCE MENU

The Maintenance Menu allows you to change a number of options that do not normally require adjustment, and are available for testing purposes only. **Adjusting these options is at your own risk, and we generally only advise adjusting them on the advice of Support. Changes may affect system functionality and reliability.**

For these options to be displayed, power down your EINBREW 3V2P system. Press and hold the **Select** and **Set** buttons, then power up the system again. You will hear 3 short beeps almost immediately, signifying success; the normal power-up sequence with a long beep will then continue. You can release the two buttons as soon as you hear the 3 short beeps.

The additional options are available in the Configuration Menu as usual, appended to the end of the existing parameters. To enter the Configuration Menu, ensure that EINBREW 3V2P is stopped, then ensure that the Preheat/Mash In Stage (HLT) is selected. Then press the **Set** button once. The menu option will appear on the upper Timer display, with its value on the lower display – use the Up/Down buttons on the Timer to navigate between the menu options, and press the **Set** button again to select.

When you select an option, you will be presented with a value – press the Up/Down buttons on the timer to change it, and press the **Set** button again to save it. If you do nothing, the menu will automatically time out and EINBREW 3V2P will return to normal operation.

Menu Option	Default	Min	Max	Explanation
P13 db Temperature Dead Band	0.0° (C)	0.0° (C)	2.0° (C)	This defines the dead band applied to the Set Temperature. This is the amount of variation allowed in the Measured Temperature from the Set Temperature, before heating is applied to correct any deviations.
P14 EP1 Enable Pump 1 Ventilation	Yes	N/A	N/A	Enable the system to automatically turn Pump 1 on and off in bursts when first activated, in order to vent any air from the Pump.
P15 P1ON Pump 1 Ventilation On Time	5s	1s	10s	Set the length of the Pump 1 Ventilation On Cycle in seconds.
P16 P1OF Pump 1 Ventilation Off Time	2s	1s	10s	Set the length of the Pump 1 Ventilation Off Cycle in seconds.
P17 P1CY Pump 1 Ventilation Cycles	3x	1x	5x	Set the number of Pump 1 Ventilation Cycles that are carried out when Pump 1 is activated, to prevent trapped air.

Menu Option	Default	Min	Max	Explanation
P18 EP1t Enable Maximum Pump 1 Temp.	Yes	N/A	N/A	Enable the system to automatically turn off Pump 1 when the highest HLT, MT or BK reading is at or above the P03 limit. This is typically used to prevent pumping when boiling, or because your pump has a set temperature limit (e.g. 60°, 85°, or 95° to prevent cavitation during boil).
P19 EP2 Enable Pump 2 Ventilation	Yes	N/A	N/A	Enable the system to automatically turn Pump 2 on and off in bursts when first activated, in order to vent any air from the Pump.
P20 P2ON Pump 2 Ventilation On Time	5s	1s	10s	Set the length of the Pump 2 Ventilation On Cycle in seconds.
P21 P2OF Pump 2 Ventilation Off Time	2s	1s	10s	Set the length of the Pump 2 Ventilation Off Cycle in seconds.
P22 P2CY Pump 2 Ventilation Cycles	3x	1x	5x	Set the number of Pump 2 Ventilation Cycles that are carried out when Pump 2 is activated, to prevent trapped air.
P23 EP2t Enable Maximum Pump 2 Temp.	Yes	N/A	N/A	Enable the system to automatically turn off Pump 2 when the highest HLT, MT or BK reading is at or above the P04 limit. This is typically used to prevent pumping when boiling, or because your pump has a set temperature limit (e.g., 60°, 85°, or 95° to prevent cavitation during boil).
P24 Eri Enable Grain Rest Inhibition	Yes	N/A	N/A	NOT RECOMMENDED TO MODIFY Enable Grain Rest Inhibition when approaching the Set Point in Mashing Stage. This ensures that a Grain Rest will not occur when approaching the Set Point, ensuring greater control accuracy.
P25 BLBS Boil Level Buffer Size	10x	4x	30x	NOT RECOMMENDED TO MODIFY Number of temperature readings between the two groups compared for boil detection.
P26 BLSP Boil Level Sample Period	4x	1x	30x	NOT RECOMMENDED TO MODIFY The number of samples carried out for Boil Detection.
P27 bdt Boil Detection Threshold	97° (C)	80° (C)	105° (C)	NOT RECOMMENDED TO MODIFY Automatic Boil Detection will commence when the temperature measured in the Boil Kettle meets or exceeds this value during the Boil Stage.
P28 bdtL Boil Detection Tolerance	0.0	0.0	0.5	NOT RECOMMENDED TO MODIFY Increases the allowable tolerance for triggering the boiling point detection. Increasing this value may help if your system is unable to detect boil when it occurs, although too high a value will lead to false positive detections.
P29 AcdB Active Display Brightness	10	5	15	Sets the brightness of the 7-segment display which represents the active Brewing Stage.

Menu Option	Default	Min	Max	Explanation
P30 IndB Inactive Display Brightness	0	0	5	Sets the brightness of the 7-segment display which represents the inactive Brewing Stages.
P31 PSAd Voltage Phase Sync Delay	0 (ms)	0 (ms)	9 (ms)	NOT RECOMMENDED TO MODIFY Enables Voltage Phase Sync when changing Pump State. This helps improve relay lifetime and system stability with noisy pumps. This setting applies to all Pumps.
P32 EPS Enable Voltage Phase Sync	Yes	N/A	N/A	NOT RECOMMENDED TO MODIFY Enables Voltage Phase Sync when changing Pump State. This helps improve relay lifetime and system stability with noisy pumps. This setting applies to all Pumps.

WARRANTY

All EINBREW 3V2P controllers carry a limited lifetime warranty covering manufacturing defects and component failures.

Lifetime is defined as seven years after Acksen Ltd discontinues manufacturing the product, but the warranty period shall be at least ten years from date of purchase.

The warranty does not cover manuals, fuses, disposable batteries, damage from neglect, misuse, contamination, alteration, accident or abnormal conditions of operation or handling, including failures caused by use outside of the product's specifications, or normal wear and tear of mechanical components. This warranty covers the original purchaser only and is not transferable.

The only user serviceable parts are the externally mounted electrical fuses. These can be replaced as needed. Please ensure that the system is completely disconnected from the electrical supply before attempting to remove or replace these fuses.

MAINTENANCE

Prior to each use of the unit, check the casing for signs of damage or misuse. Check the leads for signs of damage, ensure the outer insulation is not broken. If the unit is damaged it must NOT be used and should be returned to the supplier. The unit must not be used for any purpose than for that recommended by the manufacturer. The unit must not be submerged or exposed to liquid.

RETURNING EINBREW 3V2P FOR REPAIR

If returning a product to the manufacturer for repair, contact EINBREW Support for return instructions and the current repair address before shipping it freight pre-paid. A copy of the Invoice and of the packing note should be sent simultaneously by airmail to expedite clearance through Customs, if relevant. A repair estimate showing freight return and other charges will be submitted to the sender, if required and applicable, before work on the device commences.

Repair and spare-parts enquiries:

EINBREW Support: www.einbrew.com/contact

WEEE REGULATIONS

For EU customers EINBREW offer a product take-back service. For customers within the European Union (only) and products manufactured or sold by us; when those products reach the end of their life, simply send them back to us at your expense, we will dispose of them according to the relevant legislation. WEEE Registration Number WEE/DD2117VU.