Ormandy Rycroft

Heating & Cooling Solutions

# Evoplate Vessel

## Installation, Operating & Maintenance Instructions

# VERY IMPORTANT - PLEASE READ CAREFULLY



# Evoplate - Installation, Operating & Maintenance Instructions

## Lifting

Lifting lugs are fitted on the top of the vessel. These should be used when lifting the vessel into position. Ensure the vessel remains in a vertical position (for vertical vessels) and horizontal position (for horizontal vessels) throughout.

## Filling and Draining

Tighten any bolts on the vessel prior to filling as these may have become loose during transit. Ensure bolts are tightened diametrically and to the correct Torque. (if in doubt contact Ormandy Limited technical department).

When filling the vessel ensure the vent connection on the top dished end is open. When the vessel is full the vent boss should be plugged. When draining the vessel ensure the vessel is released of pressure slowly and that the vent is then open before draining commences.

## Inspection

Internal inspection of the vessel should take place after the first 3 months. The inspection should involve looking for signs of corrosion or local pitting cells. If any is found then a specialist should be consulted. If after the first inspection the vessel appears sound then a further inspection should be made after 6 months.

Again, on satisfactory review, inspection can be limited to annually. When inspecting the internal side of the vessel ensure that the vessel is first drained of its contents in accordance with the procedures detailed above.

Before removing the inspection cover ensure that the cover is first supported by use of the coverplate lifting lug. When re-fitting the cover, the bolts should be tightened diametrically.

## Foundations

Level foundations should be prepared for the buffer vessel. Uneven foundations can cause airlocks within the vessel and the vessel could be unstable when maintenance work is carried out.

The vessel should be attached to the foundations using bolts through the bolt holes on the vessel foot pads.

## Relief Valve

Ensure that the relief valve is fitted with a discharge pipe (on the valve outlet). The pipe should open to atmospheric pressure and run to a low level suitable drainage area.

## Flanges and Bosses

PTFE should be used when fitting screwed connections to the vessel bosses.

When fitting flange connections, ensure mating flanges are square and that the weight of the pipework is supported by external supports and not the vessel connections.

Expansion of pipes should be considered for the application and measures put in place if necessary.

Evoplate Package shown below

# 1. Running

## 1.1 Safety Points

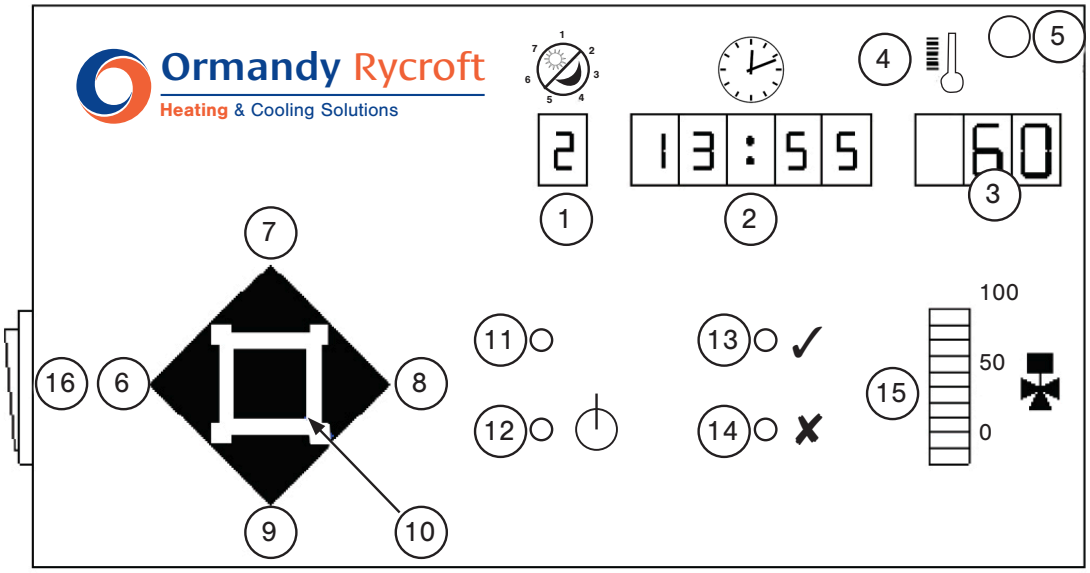
- During operation, the unit may have very hot or very cold surfaces.
- The temperature probe is installed directly in the secondary flow. Do not remove when the system is hot, full or under any pressure.
- The equipment has danger from electricity. Do not remove covers or allow any exposed live parts. Isolate before working on the unit.
- Take care when lifting. Only use the designated lifting point. Use only certified lifting equipment capable of lifting the weight. Water may also be present and spillage could occur.
- Never lift the HT breeze by any associated pipework or pipe connections.
- Take care when handling, as some of the edges may be sharp.
- Electrical and Mechanical functionality must be considered prior to connecting any none factory fitted equipment. E.g. Pumps, Valves / Actuators etc.

Switch on via switch (16)

The front panel will illuminate. After a few seconds of self checks, the displays will settle to the **Day (1)** (Time-clock only), **Time (2)** and **Temperature (3)**. The pumps will start **(11)** and the valve will open **(15)** and the system healthy indicator **(13)** will illuminate.

In the majority of applications, the resulting control and running will be perfectly satisfactory. The standard temperature setting is 60°C and the unit will run continuously (24 hour operation).

To change any of the default settings, see section (2.3).




| | | | | | |
|---|---|---|---|---|---|
| 1 | Day/Mode Display | 7 | Value Increase Push Button | 13 | System Healthy Indicator |
| 2 | Time/Alarm Display | 8 | Step Right Push Button | 14 | System Fault Indicator |
| 3 | Temperature/Parameter Display | 9 | Value Decrease Push Button | 15 | Valve Position Bar Display |
| 4 | High Temperature Alarm Indicator | 10 | Mode Select Push button | 16 | On/Off switch |
| 5 | Reset Push Button | 11 | Pump Energised Indicator | | |
| 6 | Step Left Push Button | 12 | Power On Indicator | | |

# 1. Running continued

## 1.2 Start Up - Checks

| Checks | Complete (✓) |
|---|---|
| Check that electrical installation is complete. | |
| Check that the mechanical installation is complete. | |
| Check that the system has been flushed and that there are no leaks. | |
| Check that any air has been eliminated from the system. | |
| Check that valves are opened in the required sequence. | |

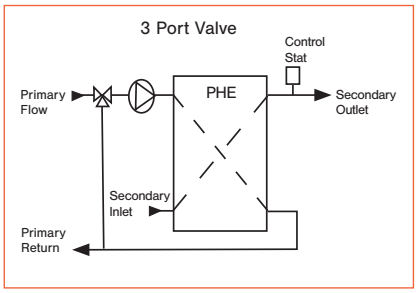
## 1.3 Working Principles

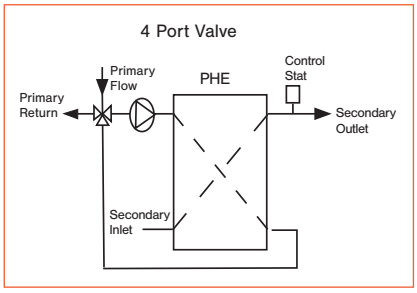
The HT Breeze comprises of a Supapac Plate Heat Exchanger, either a 3 port or 4 port control valve, primary pump, temperature sensor and PID controller, all mounted on a skid base.

The motorised 3 or 4 port control valve, allows rapid adjustment of the primary heat input to match changes in secondary hot water demand.

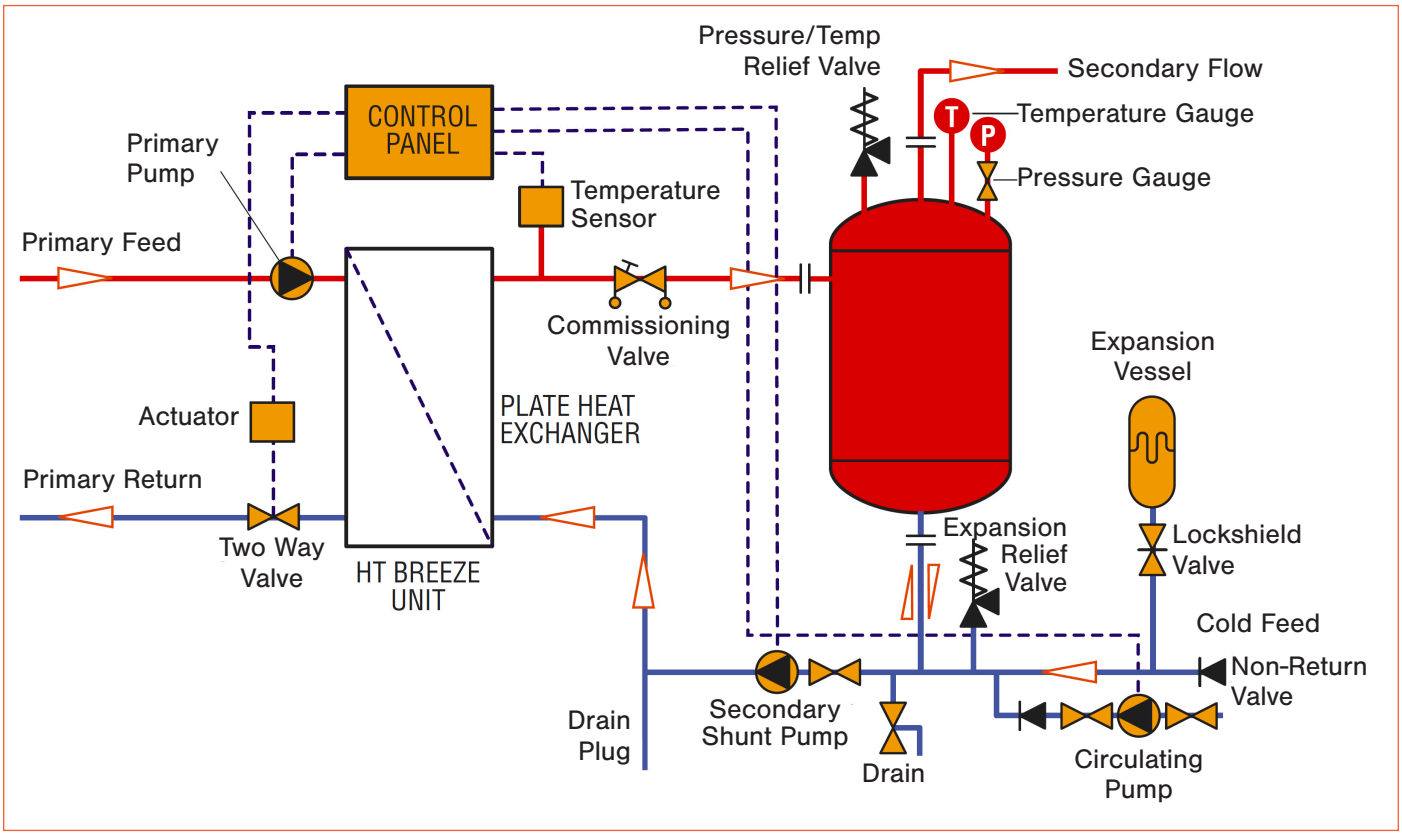
The HT Breeze requires no insulation and the design ensures that the outlet temperature does not fall below the set point (60°C default but can be adjusted to suit customer requirements) and consequently reduce the risk of legionnaires disease.

Providing the class of accommodation and details of the number and type of fixtures are known, Rycroft will be pleased to recommend the optimum size of HT Breeze.




### With buffer vessel to form a semi-instantaneous water heater



# 2. Installation

## 2.1 Sizing and Selection

To size a stand alone HT Breeze, use the following demand factors.

**Table 1**

| Facility | Private Hand Basin | Public Hand Basin | Shower | Bath | Slop Sink | Bar Sink | Kitchen Sink | Washing Machine | Lab Sink | Dish Washer |
|---|---|---|---|---|---|---|---|---|---|---|
| Hospital | 1 | 2 | 4 | 4 | 4 | | 10 | 10 | 3 | 10 |
| Residential Hall & Hotel | 1 | 2 | 4 | 4 | 4 | 12 | 10 | 10 | | 10 |
| School | 0.5 | 3 | 10 | - | 3 | | 10 | 3 | 3 | 10 |
| Sports Centre /Barracks | 0.5 | 2 | 10 | - | 3 | 12 | 10 | - | - | 10 |
| Restaurant | 0.5 | 4 | - | - | 12 | 12 | 19 | - | - | 10 |
| University | 0.5 | 3 | 10 | - | 3 | - | 10 | - | 3 | 10 |
| Offices | 0.5 | 3 | 3 | - | 3 | - | 10 | - | 3 | 10 |
| Factory | 0.5 | 3 | 4 | - | 3 | - | 10 | - | 3 | 10 |
| Apartments | 1 | - | 4 | 4 | 3 | - | 3 | 3 | - | 2 |

## Sizing Considerations

Careful consideration must be given to the sizing of stand alone instantaneous water heaters. Standard demand units incorporate a degree of diversification that would be inappropriate for continuous use applications.

A more desirable method of sizing for continuous applications is to complete a fixture count and allocate an appropriate flow for each fitting.

It should also be noted that shower demands for Schools, Sports Centres and Universities should only be used for medium to large installations. Please refer to our design department for further information.

**Example**

From Table 1. A 173 bed Hospital ward with showers, hand basins and sinks.

| | | |
|---|---|---|
| 42 single person showers | 42 x 4 | = 168 |
| 55 private hand basins | 55 x 1 | = 55 |
| 9 public hand basins | 9 x 2 | = 18 |
| 3 slop sinks | 3 x 4 | = 12 |
| 15 baths | 15 x 4 | = 60 |
| **Total Demand Units** | | **= 313** |

The shower factors are based upon intermittent use.

Where certain activities may result in all showers operating together, please contact our sales department for advice.

# 2. Installation continued

## 2.1 Sizing and Selection continued.

The correctly sized HT Breeze can now be selected from Table 2.

Table 2

| HT Breeze Model | Maximum Demand Units | Max Continuous Duty @ 60°C (litres/sec) | Boiler Power (kw) | Min Secondary Volume (litres) |
|---|---|---|---|---|
| **CP-B25** | 15 | 0.25 | 52 | 45 |
| **CP-B50** | 23 | 0.50 | 105 | 75 |
| **CP-B75** | 45 | 0.75 | 157 | 85 |
| **CP-B100** | 70 | 1.00 | 209 | 125 |
| **CP-B125** | 90 | 1.25 | 261 | 135 |
| **CP-B150** | 130 | 1.50 | 313 | 150 |
| **CP-B200** | 210 | 2.00 | 418 | 200 |
| **CP-B250** | 320 | 2.50 | 522 | 250 |
| **CP-B300** | 480 | 3.00 | 627 | 300 |
| **CP-B350** | 640 | 3.50 | 732 | 350 |
| **CP-B400** | 820 | 4.00 | 836 | 400 |
| **CP-B450** | 1050 | 4.50 | 935 | 450 |
| **CP-B500** | 1300 | 5.00 | 1040 | 500 |

These sizes represent the standard range of HT Breeze instantaneous water heaters.

For larger requirements for both single and three phase, please contact our technical department.

Both standard and special designs can be offered, to suit your specific requirements.

# 2. Installation continued

To size a HT Breeze and Buffer Vessel use the following maximum demand rates.

### Table 3

| Facility | Private Hand Basin | Public Hand Basin | Shower | Bath | Slop Sink | Bar Sink | Kitchen Sink | Washing Machine | Lab Sink | Dish Washer | Load Factor |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Hospital** | 10 | 15 | 70 | 60 | 50 | | 80 | 100 | 40 | 150 | 0.7 |
| **Residential Hall & Hotel** | 10 | 15 | 50 | 50 | 50 | 100 | 80 | 100 | | 150 | 0.5 |
| **School** | 5 | 20 | 180 | | 40 | | 80 | 40 | 40 | 150 | 0.8 |
| **Sports Centre /Barracks** | 5 | 15 | 220 | | 40 | 100 | 80 | | | 100 | 1 |
| **Restaurant** | 3 | 25 | | | 100 | 100 | 140 | | | 150 | 1 |
| **University** | 5 | 20 | 220 | | 40 | | 80 | | 40 | 150 | 0.8 |
| **Offices** | 5 | 10 | 180 | | 40 | | 40 | | 40 | 100 | 1 |
| **Factory** | 5 | 20 | 120 | | 50 | | 80 | | 40 | 100 | 1 |
| **Apartments** | 5 | | 50 | 50 | 40 | | 20 | 40 | | 20 | 0.7 |

**Example of a Hospital Facility**

| | | |
|---|---|---|
| 42 single person showers | 42 x 70 | = 2940 |
| 55 private hand basins | 55 x 10 | = 550 |
| 9 public hand basins | 9 x 15 | = 135 |
| 3 slop sinks | 3 x 50 | = 150 |
| 15 baths | 15 x 60 | = 900 |
| **Total Volume** | | **= 4675** |
| **Load Factor from Table 3** | | **= 0.7** |
| **Total Demand Rate** | **4675 x 0.7** | **= 3273 litres/hr** |

**The HT Breeze and Buffer Vessel combination should be sized as follows:-**
The Buffer Vessel Capacity = 25% of the total hourly demand. Therefore the required storage capacity = 3273 x 0.25 = 818 litres. The nearest standard Buffer Vessel sizes are 800 and 900 litres. It is recommended to go up in size and therefore a 900 litre Buffer Vessel should be selected.

**The HT Breeze can be selected as follows:-**

Continuous hourly demand = 3273 litres
Specific Heat Capacity of Water = 4.187 kj/kg, °C
Cold Feed Temperature = 10°C
Secondary Flow Temperature = 60°C

Therefore the required kw rating $= \frac{3273 \times 4.187 \times (60-10)}{3600}$ **= 190.3 kw**

**The nearest standard HT Breeze is a CP-B100 which is rated at 209 kw**

# 2. Installation continued

## 2.1 Sizing and Selection continued.

A HT Breeze and Buffer Vessel combination is used when water demand is not constant but high flow frequently occurs. Boiler power requirements are reduced by storing hot water in the buffer vessel for peak demands.

The HT Breeze should always be installed with a secondary return line coming back from the system and into the cold feed line prior to the HT Breeze or Buffer Vessel. This will remove nuisance high limit tripping due to temperature overshoot, which would occur if the unit was installed on a 'dead end' system, when an outlet was closed. To ensure full heat dissipation, the secondary volume should not be less than that shown in Table 2.

For larger capacities contact the sales department for advice.

## 2.2 Installation

**Foundations**
The HT Breeze should be mounted on prepared foundations that are level.

**Lifting**
One lifting hole is provided on the top of the HT Breeze control panel. Avoid the use of chains as screwed connections may be damaged by the links.

**Caution: Never lift the HT Breeze by its pipework or pipe connections.**

**Pipework**
Make sure that the pipework flanges are square and correctly spaced before bolting up. See that the weight of the pipework is taken by external supports and not by the HT Breeze. Allowances should be made for expansion of the pipes either by suitable bends or flexible joints. Tighten flange bolts in a diametrically opposite sequence and not consecutively round each flange.

**Connections**
Threaded connection may be sealed with PTFE tape. Flanged connections should be sealed with a suitable gasket and sealing agent.

**Liquid Expansion**
Changes in volume with temperature must not be overlooked. The system pressure will rise dramatically if there is nowhere for water to expand. It is not advisable to use a relief valve as a means of releasing the excess water.

Vented systems use the atmospheric vent as an expansion pipe with discharge back into the tank. Unvented systems require a separate expansion tank.

**Venting**
Vent valves must be fitted at the highest point in the connecting pipework so that the HT Breeze can be bled of air for initial operation. It is essential that the flooded can type pump motors which are commonly used for all HT Breeze pumps are bled of air and flooded before starting. See the pump manufacturer's instructions.

**Filling**
Before filling the system check that the drain valve is closed and all air vents are open.

Flush out the system before installing the HT Breeze to remove any foreign matter.

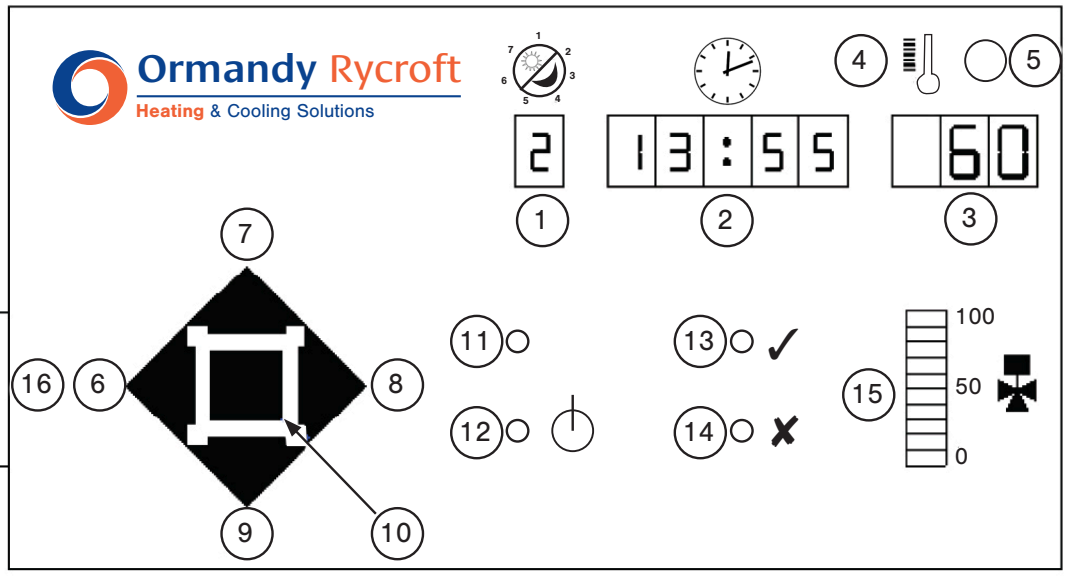
Close any manual air vents and run the HT Breeze.

Crack the vents to release air

**Caution: Do not fill the system too quickly, otherwise pockets of air may become trapped.**

# 2. Installation continued

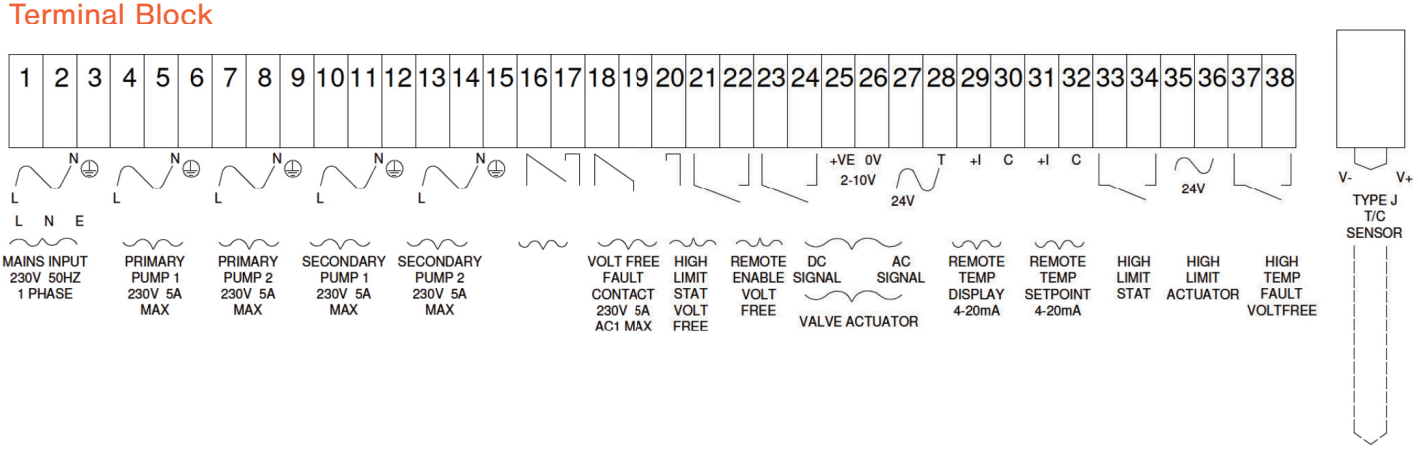
## 2.3 Operation and Set Up




1 Day/Mode Display
2 Time/Alarm Display
3 Temperature/Parameter Display
4 High Temperature Alarm Indicator
5 Reset Push Button
6 Step Left Push Button
7 Value Increase Push Button
8 Step Right Push Button
9 Value Decrease Push Button
10 Mode Select Push button
11 Pump Energised Indicator
12 Power On Indicator
13 System Healthy Indicator
14 System Fault Indicator
15 Valve Position Bar Display
16 On/Off switch

## Electrical Connections

### Terminal Block




The Electrical connections are located in the terminal compartment.
A description of the terminals can be found on the inside of the terminal compartment cover.

Connect a single phase 230V 50Hz supply to the Mains Input terminals. Max full load current is 16A with the majority of units being considerably less.

If the unit is to be controlled remotely, connect the remote control switch or contacts to the ‘Remote Enable Terminals’. If the unit is to be controlled locally fit a link between these terminals.

**Do NOT apply voltage to the terminals of these contacts!**

Voltage free fault relay contacts are provided for Remote Fault Indication.

# 2. Installation continued

## 2.3 Operation and Set Up Continued.

**Operation**
The HT Breeze is a self-contained unit, which controls up to two primary and two secondary pumps, together with a three/four-port valve to provide hot water. When the system is fitted with two primary pumps they are operated on a shared duty-standby cycle with automatic changeover on pump failure.

The HT Breeze can be energised by its own internal time clock function, by a remote switch or Building Management System or by a combination of the two.

**a) Remote Switch or Building Management System Control**

The HT Breeze will be turned on when contacts connected to the Remote Enable terminals are closed. This allows the user to control the time of day when hot water will be available.

When the contacts are open the system is turned off.

**b) Internal Time Clock Control**

For this function to work the Time clock function should be turned on (see Set Up) and the Remote Enable terminals should be linked.

Under Time clock control the HT Breeze will be automatically turned on and off at preset times of the day. Up to two on and two off times can be programmed for each day of the week.

The system can be re-activated after it has automatically switched off by pressing the Value Increase (7) push button. Each press of this push button will add 30-minute increments to a total, which is shown in the Time/Alarm window. Pressing the Value Decrease (9) push button will subtract 30-minute increments from the total time.

The time value counts down and when the time shown has elapsed, the unit will revert to normal time clock operation.

**c) Remote Switch and Internal Time Clock Control**

For this function to work the Time clock function should be turned on (see Set Up) and a remote Control switch should be connected to the Remote Enable terminals.

Under Time clock control the HT Breeze will be automatically turned on and off at preset times of the day. Up to two on and two off times can be programmed for each day of the week. When contacts connected to the Remote Enable terminals are opened the HT Breeze will be turned off.

When the system has turned off under time clock control it can be re-activated by pressing the Value Increase (7) push button. Each press of this push button will add 30-minute increments to a total, which is shown in the Time/Alarm window. Pressing the Value Decrease (9) push button will subtract 30-minute increments from the total time.

The time value counts down and when the time shown has elapsed, the unit will switch off and revert to normal time clock operation. However, when the system has been turned off under remote control it cannot be re-activated by pressing the Value Increase (7) push button.

# 2. Installation continued

## 2.3 Operation and Set Up Continued

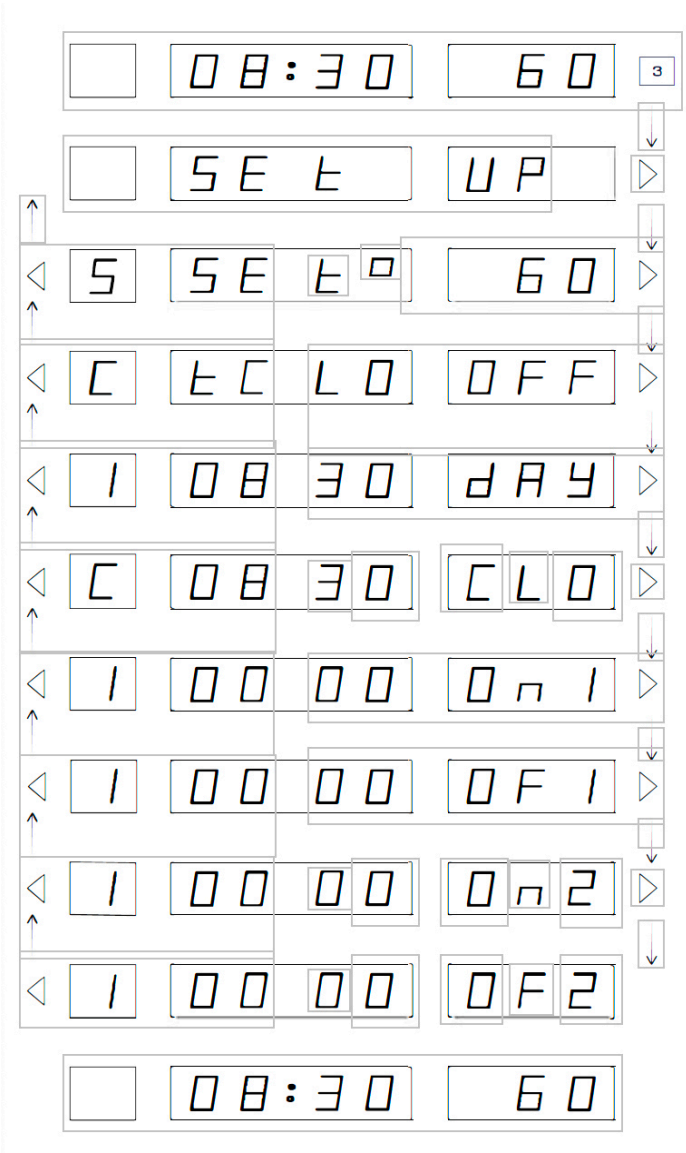
**Set Up**

The HT Breeze control unit is factory programmed with temperature and control settings that will suit most applications. However, we would recommend that the unit is commissioned to ensure correct operation and maximum efficiency. Contact our Service Department for details.

All the values are adjustable so that you can customise the unit to exactly match your system.

The set up routine is entered by pressing and holding the Mode (10) push button for three seconds.
Press the Step Right (8) and Step left (6) push buttons to move forwards and backwards through the sequence.
Press the Value Increase (7) or Value Decrease (9) push buttons to alter the value shown in the display.
Press and hold the Mode (10) push button for 3 seconds to exit the set up routine.

Figure 1 - Set Up Sequence




Press and hold for 3 seconds to enter **Set Up** routine.

Press **Step Right** to move to first value.

Press **Value Increase** or **Value Decrease** push buttons to alter water temperature.

Press **Value Increase** to turn Time clock function on or off.

Press **Value Increase** or **Value Decrease** to change Day number.

Press **Value Increase** or **Value Decrease** push buttons to change time. Press and hold push button for rapid change.

Press **Value Increase** or **Value Decrease** push buttons to change the time of the first timed on and off period. Press and hold push button for rapid change.

Press **Value Increase** or **Value Decrease** push buttons to change the time of the second timed on and off period. Press and hold push button for rapid change.

Press **Step Right** push button to set the on-off times for day 2, day 3, day 4 etc. Press and hold **Value Select** push button for 3 seconds to exit Set Up routine.

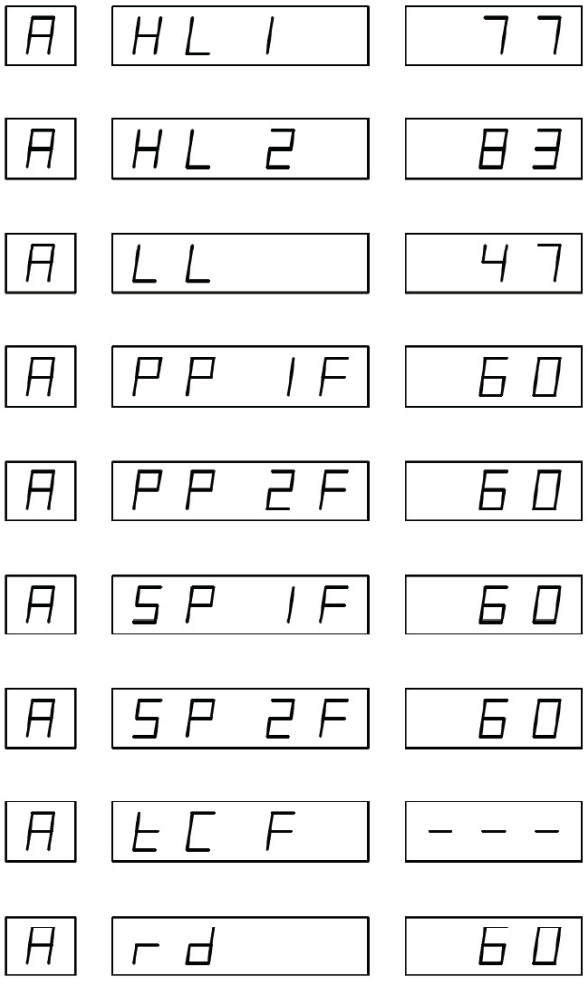
The system continues to control when the controller is in the set up routine allowing adjustments to be made on the fly

# 2. Installation continued

## 2.3 Operation and Set Up Continued

**System Faults**
When a fault situation is detected the System Fault (14) indicator will be lit and the internal Fault relay will be energised. The normal time and temperature display will be replaced by an alarm message. The messages and meanings are shown in Figure 2 below. If a system fault occurs when the controller is in the set up routine the System Fault (14) indicator will be lit but the display will not be replaced by an alarm message. The alarm message can be viewed by leaving the Set Up routine.

Figure 2 - Alarm Messages




First High temperature level detected.

Second High temperature level detected - buzzer sounds and the system is automatically shut down.

Low temperature detected.

Primary Pump No 1 failure - if two primary pumps are fitted Primary Pump No 2 will be energised.

Primary Pump No 2 failure - Primary Pump No 1 will be energised.

Secondary Pump No 1 (shunt) failure - system is automatically shut down.

Secondary Pump No 2 (re-circulation) failure -system is automatically shut down.

Thermo-couple failure - the system is automatically shut down.

System has been remotely disabled

The Second High temperature level alarm will automatically shut the system down and sound a warning buzzer. The buzzer can be silenced by pressing the Reset (5) push button. When the fault has been diagnosed and corrected the system can be re-activated by pressing the Reset (5) push button again. This can only be performed when the temperatures have returned to near normal. All the other alarms will automatically reset when the problem has been corrected. Alarms constantly re-occurring could indicate that the system is incorrectly configured.

**Advanced Set Up Routine**
The system is supplied with default settings, which suit most applications. The advanced set up feature allows Installers and Engineers to tailor the settings to suit particular installations. The system continues to control when the controller is in the advanced set up routine so that the results of adjustments can be seen immediately. In addition manual control of the valve position is available.

# 2. Installation continued

## 2.3 Operation and Set Up Continued

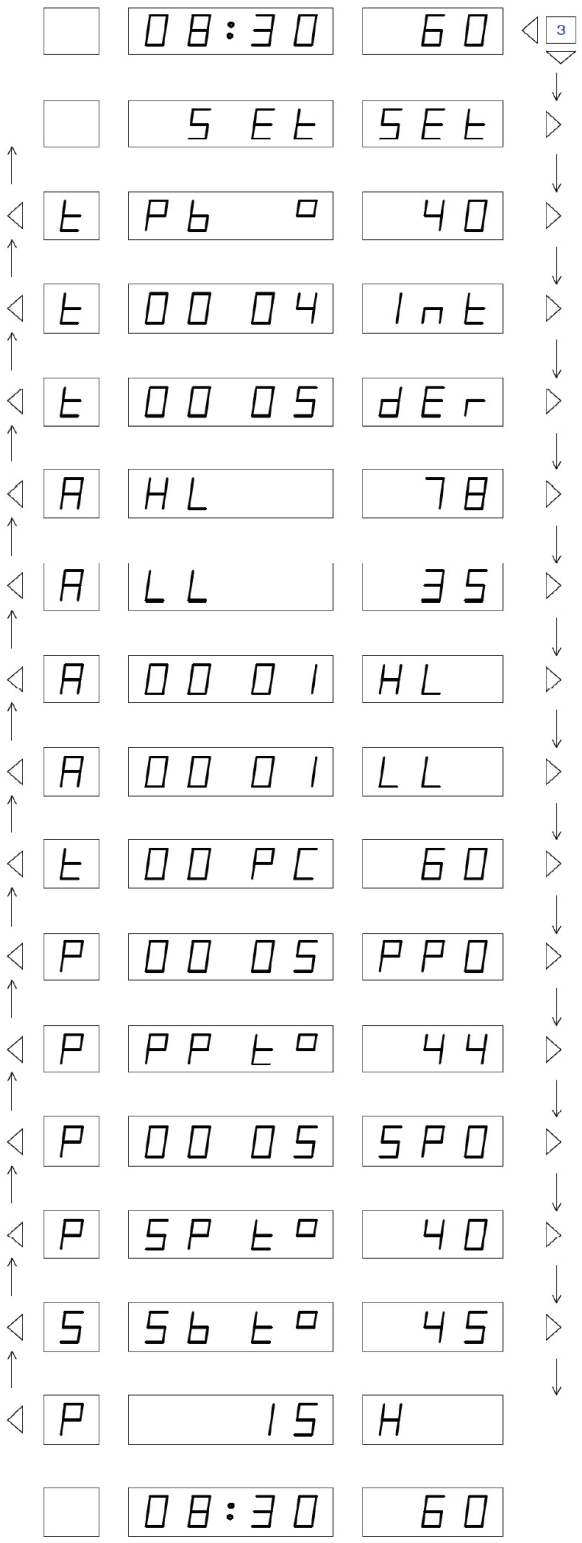
The set up routine is entered by simultaneously pressing and holding the Mode [10], Step Left [6] and Value Decrease [9], Push buttons for three seconds.

Press Step Right [8] and Step Left [6] push buttons to move forwards and backwards through the sequence.

Press the Value Increase [7] or Value Decrease [9] push buttons to alter the value shown in the display.

Press and hold the Mode [10] push button for 3 seconds to exit the set up routine.

Figure 3 - Advanced Set Up




Press and hold for 3 seconds to enter Advanced Set Up routine.

Press **Step Right** push button to move to the first setting value.

Press **Value Increase** or **Value Decrease** push buttons to alter Proportional Band.

Press **Value Increase** or **Value Decrease** push buttons to alter Integral Time.

Press **Value Increase** or **Value Decrease** push buttons to alter Derivative time.

Press **Value Increase** or **Value Decrease** push buttons to alter First level High temperature limit.

Press **Value Increase** or **Value Decrease** push buttons to alter Low Temperature Limit.

Press **Value Increase** or **Value Decrease** push buttons to alter High Temperature Limit Time Delay.

Press **Value Increase** or **Value Decrease** push buttons to alter Lower Temperature Limit Time Delay.

Press **Value Increase** or **Value Decrease** push buttons to vary valve position. Figure shows percentage open.

Press **Value Increase** or **Value Decrease** push buttons to alter Primary Pump over-run time.

Press **Value Increase** or **Value Decrease** push buttons to alter Primary Pump over-run temperature.

Press **Value Increase** or **Value Decrease** push buttons to alter Secondary Pump over-run time.

Press **Value Increase** or **Value Decrease** push buttons to alter Secondary Pump over-run temperature.

Press **Value Increase** or **Value Decrease** push buttons to alter the Night Set-back/Pasteurisation temperature.

Press **Value Increase** or **Value Decrease** push buttons to alter Primary Pump duty - standby time.

Press and hold **Mode** push button for 3 seconds to exit Set Up routine.

# 2. Installation continued

## 2.3 Operation and Set Up Continued

**Night Set Back / Pasteurisation**
When the DIP switch for Night set-back/Pasteurisation is set to the on position and the unit into standby. When set back/pasteurisation value (S Sb to) is set to above normal set temperature (S SET To) the controller assumes pasteurisation and raises the temperature to the set back/pasteurisation value for one hour, before returning to standby. Alternatively, when it (S Sb To) is set to below normal set temperature, the controller assumes set back and lowers the temperature to this value until normal day running begins.

**Manual Control**
The Advanced Set Up routine allows engineers to position the control valve manually. This feature is active while this set up window is visible. This feature can be disabled and control restored to automatic by pressing the Step Left (6), or Step Right (8) push buttons to display another parameter or pressing and holding the Mode (10), push button to exit the advanced set up routine.

**Remote Set Point Adjustment**
When a 4 - 20mA signal is connected to the remote input, the set point can be varied between 20 deg c = 4mA and l00 deg c = 20mA. It should be noted that BMS control of the unit starts as soon as the external signal of above 2mA is detected. Conversely if the controller loses signal, or the signal drops below 2mA it will revert back to it's own internal set point.

**DIP Switch Settings**
The physical configuration of the system and the Night Set-back function are programmed into the controller by setting the position of eight switches. Switches are located on the display printed circuit board.
To change the position of these switches:

1) Isolate the mains supply to the controller.
2) Open the hinged door.
3) Remove the four black fixing screws and slide the control facia out of the enclosure taking care not to pull the connecting cable.
4) Turn the facia over. DIP switches are located on the bottom edge of the circuit board.
5) Change the switch positions as required (see table below)
6) Replace facia, close hinged door and switch on the mains supply.

The following table shows the switch controls. (**Bold** positions are factory default values).

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | Function |
|---|---|---|---|---|---|---|---|---|
| On | | | | | | | | No Operation |
| **Off** | | | | | | | | No Operation |
| | On | | | | | | | No Operation |
| | **Off** | | | | | | | No Operation |
| | | On | | | | | | Fault Relay Operates During Remote Disable |
| | | **Off** | | | | | | Fault Relay, No Operation During Remote Disable |
| | | | On | | | | | Valve Output 2-10V |
| | | | **Off** | | | | | Valve Output 0-10V |
| | | | | **Off** | | | | Night Setback OFF |
| | | | | On | | | | Night Setback ON |
| | | | | | Off | Off | | No Secondary Pumps Fitted |
| | | | | | Off | **On** | | 1 Secondary Pump Fitted (SHUNT) |
| | | | | | **On** | Off | | 1 Secondary Pump Fitted (RECIRC) |
| | | | | | | | **Off** | 1 Primary Pump Fitted |
| | | | | | | | On | 2 Primary Pumps Fitted |

# 2. Installation continued

## 2.3 Operation and Set Up Continued

Factory Default Settings ☐

**Set Up:**

| | | | | |
|---|---|---|---|---|
| Alternative setting record (Date) | | ..... | ..... | ..... |
| Set Point | = 60 | ..... | ..... | ..... |
| Time Clock | = Off | ..... | ..... | ..... |
| Day (Set) | = 1 = Mon 7 = Sunday | | | |
| Clock (Set) | = Time | | | |
| Day 1 ON 1 | = 0000 | ..... | ..... | ..... |
| Day 1 OFF 1 | = 0000 | ..... | ..... | ..... |
| Day 1 ON 2 | = 0000 | ..... | ..... | ..... |
| Day 1 OFF 2 | = 0000 | ..... | ..... | ..... |
| Day 2 ON 1 | = 0000 | ..... | ..... | ..... |
| Day 2 OFF 1 | = 0000 | ..... | ..... | ..... |
| Day 2 ON 2 | = 0000 | ..... | ..... | ..... |
| Day 2 OFF 2 | = 0000 | ..... | ..... | ..... |
| Day 3 ON 1 | = 0000 | ..... | ..... | ..... |
| Day 3 OFF 1 | = 0000 | ..... | ..... | ..... |
| Day 3 ON 2 | = 0000 | ..... | ..... | ..... |
| Day 3 OFF 2 | = 0000 | ..... | ..... | ..... |
| Day 4 ON 1 | = 0000 | ..... | ..... | ..... |
| Day 4 OFF 1 | = 0000 | ..... | ..... | ..... |
| Day 4 ON 2 | = 0000 | ..... | ..... | ..... |
| Day 4 OFF 2 | = 0000 | ..... | ..... | ..... |
| Day 5 ON 1 | = 0000 | ..... | ..... | ..... |
| Day 5 OFF 1 | = 0000 | ..... | ..... | ..... |
| Day 5 ON 2 | = 0000 | ..... | ..... | ..... |
| Day 5 OFF 2 | = 0000 | ..... | ..... | ..... |
| Day 6 ON 1 | = 0000 | ..... | ..... | ..... |
| Day 6 OFF 1 | = 0000 | ..... | ..... | ..... |
| Day 6 ON 2 | = 0000 | ..... | ..... | ..... |
| Day 6 OFF 2 | = 0000 | ..... | ..... | ..... |
| Day 7 ON 1 | = 0000 | ..... | ..... | ..... |
| Day 7 OFF 1 | = 0000 | ..... | ..... | ..... |
| Day 7 ON 2 | = 0000 | ..... | ..... | ..... |
| Day 7 OFF 2 | = 0000 | ..... | ..... | ..... |

◁ ☐ ▽ **Set Set:**

| | | | | |
|---|---|---|---|---|
| | | Alternative setting record (Date) | | |
| | | ..... | ..... | ..... |
| Proportional Band | = 60% | ..... | ..... | ..... |
| Integral Time | = 4 mins | ..... | ..... | ..... |
| Derivative Time | = Off | ..... | ..... | ..... |
| High Limit | = 78°C | ..... | ..... | ..... |
| Low Temperature Warning | = 35°C | ..... | ..... | ..... |
| High Temperature Limit Time Delay | = 1 min | ..... | ..... | ..... |
| Low Temperature Limit Time Delay | = 1 min | ..... | ..... | ..... |

# 2. Installation continued

## 2.3 Operation and Set Up Continued

| | | | | |
|---|---|---|---|---|
| Manual Valve Operation | =00% | | (Not presetting) | |
| Primary Pump Overrun Time | = 5 mins | ..... | ..... | ..... |
| Primary Pump Overrun Temperature | = 40°C | ..... | ..... | ..... |
| Secondary Pump Overrun Time | = 5 mins | ..... | ..... | ..... |
| Secondary Pump Overrun Temperature | = 40°C | ..... | ..... | ..... |
| Night Set-back/Pasteurisation Temperature | = 68°C | ..... | ..... | ..... |
| Primary Pump Duty Changeover Time | = 9 hrs | ..... | ..... | ..... |

By pressing the reset (5) and mode (10) buttons simultaneously for a few seconds, the time clock settings will be returned to the factory default settings.

By pressing the reset (5) and decrease (9) buttons, the control and alarm parameters will be returned to the factory default settings.

# 3. Health

## 3.1 Maintenance

A detailed inspection of the HT Breeze should be made after six months. This provides an insight into future requirements for efficient maintenance. If the HT Breeze is cleaned and there is no sign of corrosion, it can be safely assumed an annual inspection will be sufficient for future servicing.
All electrical connections should be checked and tightened if necessary.

Caution:- Maintenance should only be performed by qualified personnel only. Electrical work should be carried out by a qualified electrician in strict conformance to the latest requirements.

In order to maintain the HT Breeze unit you will require as a minimum the following tool kit:

- Set of Metric allen Keys up to M16
- Set of Metric spanners
- Set of Screwdrivers
- A pipe wrench to suit a maximum 50mm nominal pipe size.
- M16 friction ratchet and M16 deep ring spanner (CP-B25 to CP-B250)

**Controller**
The controller is run via an EPROM that stores all the changes to the time programmes and other data.

After the first six months, all connections in the panel should be checked and tightened if necessary.

**Temperature Thermocouple**
Ensure that the Thermocouple connections are satisfactory.
Refer to the manufacturer's instructions.

**Control Valve and Actuator**
Check that the valve will open and close by using the manual facility on the controller. Electrical connection should be checked at the actuator. The linkage should also be tightened to ensure good mechanical contact.
Refer to the manufacturer's instructions.

**Hi-Limit Valve and Actuator (if fitted)**
Check that the valve opens and closes by turning the power on and off. Electrical connection should be checked at the actuator. The linkage should also be tightened to ensure good mechanical contact.
Refer to the manufacturer's instructions.

**Primary Pump**
Ensure that the pump is on the correct speed setting and that wiring is secure at all terminals.

**Plate Heat Exchanger**
A series of contoured plates with ports form a plate pack with flow channels. The hot water flows down alternate channels, while the cold water flows up alternate channels, creating a 100% counter flow.

## 3.2 Service

Ormandy offers a full and comprehensive range of service and support.

This encompasses the maintenance, commissioning and repair of general water heating equipment, including heat exchangers, boilers, pressurisation units, booster sets and calorifiers.

**Contact our Sales Department - sales@ormandygroup.com**

## 3.3 Spares

All HT Breeze component parts are available as replacement/spare items.

Each unit carries a unique serial number (12345/6) and should be quoted when ordering spares.

# 4. Information

## 4.1 Specification

**Power Supply Requirements**
Voltage: 230 Volts, 50Hz.
Nominal current: Maximum 16Amps (Pump and Duty dependant).

**Inputs**
Temperature probe: Type J thermocouple (Grounded) via a 12 bit A/D converter (minimum 0.1 °C resolution). Display range: 0 - 250°C

**Volt Free Contacts**
To enable from remote source (Time-clock, SCADA,BMS, boiler controls etc).

For connection of a supplementary high limit contact or thermostat as a second alarm Pump (s) fault contact.

**Signal**
4-20mA remote set point adjustment. 4mA = 20°C. 20mA = 100°C

**Outputs**

- Two primary (IDuty, !Standby) single phase 230v SA Maximum (Resistive load).
- Two secondary (1 circulation, 1 shunt ) single phase 230v SA Maximum (Resistive load)
- Hi - Limit and Control actuator supply, 24 v.a.c 50 VA Max. Combined.
- Control signal 2 - 10 v, 0 - 10.d.c 0. lmA, Max.
- The effective control setting range 0 - 87°C

**Volt Free Contacts**
Changeover fault contact for remote alarm on fault, to SCADA, BMS, Annunciator etc.

**Signal**
4 - 20mA remote indication of process variable. 4mA = 0° C.20mA = 100°C

**Enclosure**
The enclosure is Polystyrene based, with a clear polycarbonate hinged lid ingress protection rated at IP65. The lid has a snap lock and can be fitted with the screwdriver slotted locking catch (Supplied loose)

***NOTE: The volt free contact terminals must not have voltage applied to them**

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