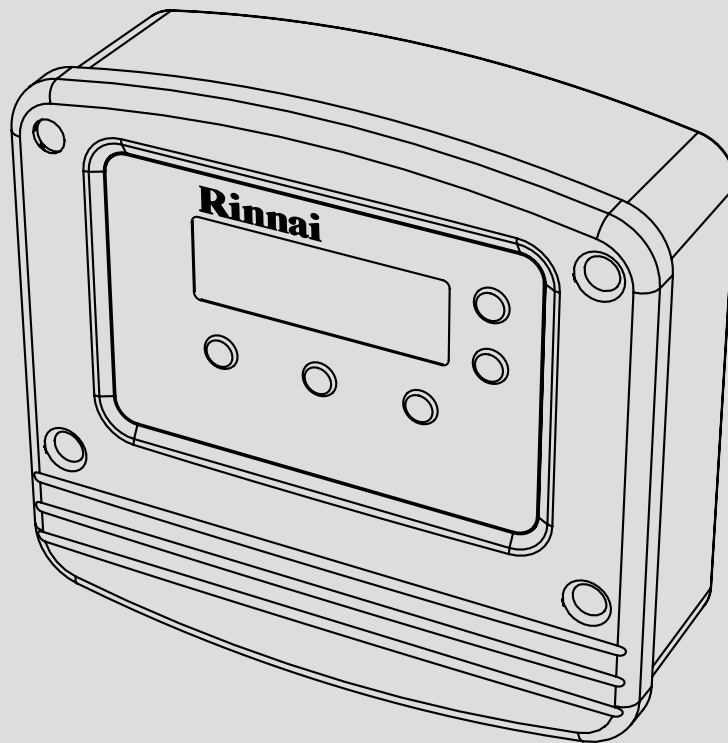


Programming setup for the following Rinnai commercial systems:

- Demand Rapid with one INFINITY and a single pump
- Demand Duo (DD400-1000) with a single pump
- Demand Duo (DD400-1000) with two pumps
- Demand Duo (DD400-1000) in a circulating ring main system with two pumps



## **Demand Duo commercial controller (DDSTAT234)**

### Programming guide

**Rinnai**

# Important

Rinnai is constantly improving its products, and as such, information and specifications are subject to change without notice. For the most up-to-date information, go to [www.rinnai.co.nz](http://www.rinnai.co.nz)

## Installation

This controller must be installed in accordance with:

- Manufacturer's instructions
- Current AS/NZS 3000 Wiring Rules

Installation, servicing and repair shall be carried out only by authorised personnel.

## Warning

Improper installation, adjustment, alteration, service and maintenance can cause property damage, personal injury or loss of life.

For more information about buying, using, and servicing of Rinnai appliances call: 0800 RINNAI (0800 746 624).

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[youtube.com/rinnainz](http://youtube.com/rinnainz)  
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# Quick start programming

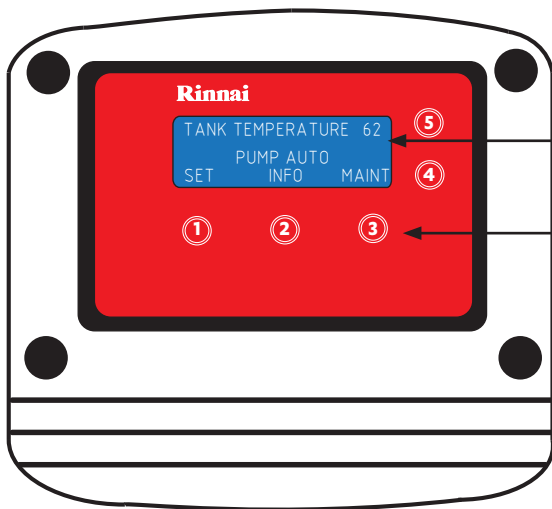
The DDSTAT will need to be programmed for the specific application. To do this requires accessing different controller modes. In all applications you will be doing the following:

1. User menu            To view and set the system temperatures, further detail on p.5
2. Factory mode        To view and set up the system, further detail on p.6
3. Service mode        To view and set up how the pump operates, further detail on p.10

**Bold** = standard settings

DEMAND RAPID, DEMAND DUO SINGLE PUMP AND DEMAND DUO DUAL PUMP			
Controller mode	Access code	Programming sequence	Additional comments
1. User menu	N/A	Set > tank set temp > <b>65</b> > accept > tank low temp > <b>60</b> > accept	INFINITY is set to 75 °C
2. Factory mode	Hold 2 down then 5 > 4 > 5 > 5  <b>Important</b> If you select 'Change' you must reset ALL parameters.	<u>Demand Rapid</u> Model > DDSTAT > DD1 > Measure return temp <sup>1</sup> > <b>No</b> > Continue to advanced setup > BMS relay > <b>Normally open</b>  <u>Demand Duo single pump</u> Model > DDSTAT > DD2+1P > Measure return temp <sup>1</sup> > <b>No</b> > Continue to advanced setup > BMS relay > <b>Normally open</b>  <u>Demand Duo dual pump</u> Model > DDSTAT > DD2+2P > Measure return temp <sup>1</sup> > <b>No</b> > Alternate pump operation > <b>Yes</b> > Swap pumps every > <b>12 hours</b> > Continue to advanced setup > BMS relay > <b>Normally open</b>	Left power point = INFINITY  Right power point = pump  Left power point = pump 1  Right power point = pump 2
3. Service mode	Hold 5 down then 1 > 3 > 1 > 1	<u>All systems</u> Continue > Change mode > Interrupt mode > Interrupt after > 28 mins > Interrupt for > 30 secs > Exit	
<sup>1</sup> Additional temperature sensor available as a separate part (code R5409), to measure temperature supplied from water heater(s).			
BUILDING FLOW AND RETURN (RING MAIN) → further information on p.9			
1. User menu	N/A	Set > Ring main temp > <b>60</b> > accept	
2. Factory mode	Hold 2 down then 5 > 4 > 5 > 5	Model > DDPCDEL > Ring main low limit > <b>5</b> > Alternate pump operation > <b>Yes</b> > Swap pump every > <b>12 hours</b> > Continue to advanced setup > BMS relay > <b>Normally open</b>	
3. Service mode	Hold 5 down then 1 > 3 > 1 > 1	Continue > Pump operation > <b>Boost</b> > Change mode > <b>Continuous mode</b> > Exit	
ALL SYSTEMS: CLEAR ERROR CODES / ALARMS → further information on p.10			
3. Service mode	Hold 5 down then 1 > 3 > 1 > 1	Continue > Reset pump run hours > No > View error logs > Yes > Clear	

# DDSTAT controller - general



## Controller display

Default configuration is DD2 + 1 P, tank set at 65 °C, tank low temperature at 60 °C.

## Controller buttons

Illustrated with numbers for instruction purposes.

## About

The DDSTAT controller is used in conjunction with Demand Rapid / Duo systems and operates by measuring the temperature of the water in the tank. If the temperature of the water falls below the 'tank set temperature'<sup>1</sup> and the 'tank low limit temperature'<sup>2</sup> the controller will switch on the pump(s) and circulate water from the tank through the Rinnai INFINITY water heater and back to the tank.

The DDSTAT is configured with:

- a power feed to the controller
- a tank temperature probe
- two integrated pump GPO's

<sup>1</sup> Tank set temperature range is 60 °C to 82 °C (factory default is 65 °C).

<sup>2</sup> Tank low limit temperature range is 3 °C less than the tank set temperature down to 50 °C (factory default is 5 °C)

## Available configurations

System description	Model name	LH GPO	RH GPO
Demand Rapid with one INF and one pump	DD1	Permanently active for INF	Pump
DD 400-1000 with a single pump	DD2 + 1P	Disabled	Pump
DD 400-1000 with a two pumps	DD2 + 2P	Pump 1	Pump 2
DD 400-1000 circulating ring main (two pumps)	DDCPDEL	-	-

## Controller positioning

When installing and locating the controller, please ensure that the position is dry and free from constant exposure to water.

DO NOT use power boards with this controller.

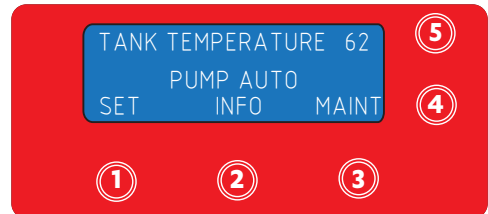
## Electrical

DO NOT modify the electrical wiring of this controller. If the wiring is damaged or has deteriorated then it must be replaced by an authorised tradesperson. Failure to do so may result in electric shock, fire, serious injury, or product failure.

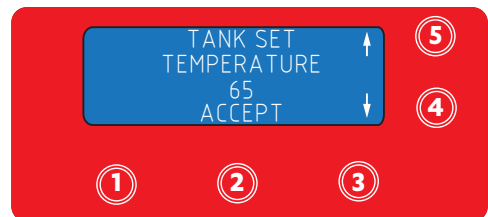
# Basic operation - setting tank temperatures

Once the controller has power, the tank temperature (home) screen is displayed. If the temperature probe is in place a reading will be displayed. If you need to change the default tank temperatures follow the below steps.

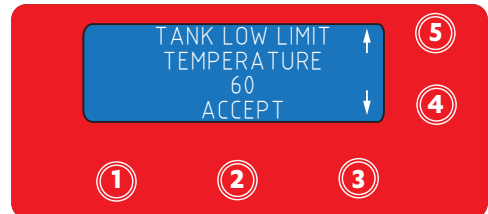
**1 Press SET**  
Press SET to allow the tank settings to be changed.



**2 Change the tank set temperature**  
Default is 65 °C, to change use buttons 4 and 5, and press ACCEPT (button 2).



**3 Change the low limit temperature**  
Default is 60 °C, 5 °C less than the tank set temperature. To change use buttons 4 and 5, and press ACCEPT (button 2).



# Programming - accessing factory mode

Factory mode needs to be accessed to change the system configuration. To do this make sure the controller is switched on and the system display is showing.

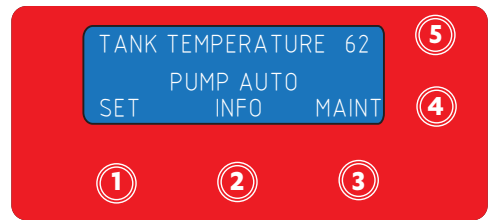
1

## Access factory mode

Hold down button 2 and press the following buttons in quick sequence:

**Hold 2: 5 > 4 > 5 > 5**

If done correctly the next screen (below) will show the current model settings.

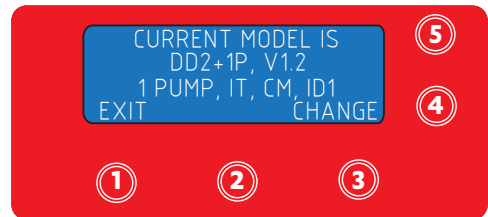


2

## Change the factory setting

To change the setting from what is showing on the screen, press button 3 to 'Change'.

1T = 1 temp. sensor  
CM = pump in continuous mode  
ID1 = controller ID 1

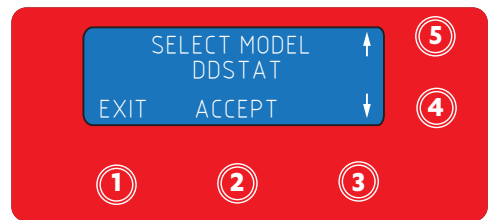


3

## Access the operating mode

This screen will give the option of cycling through the three operating modes (DDSTAT, DDPCEL, DDSOLAR), by using the up and down arrows.

Select the system operating mode required by pressing button 2 'ACCEPT' and configure based on the relevant system detailed in this guide.



## DDSTAT with one or two pumps (p.7-8)

Used with Demand Duo systems and operates by measuring the temperature of the water in the tank. If the water temperature falls below the tank set temperature and the tank low limit temperature, the controller will switch on the pump(s) to circulate water through the system.

## DDPCEL (p.9)

Used to monitor commercial flow and return systems. The main functionality of this mode is to extend the life of the pumps by regular alternation, or overcome any issues with a faulty pump if present.

## DDSOLAR (N/A to NZ)

# Programming - DD400-1000 single pump

To set the Demand Duo system for a single pump ensure you have selected the DDSTAT mode by following the instructions on the previous page.

1

## Select DD2 + 1P

You can cycle through the system configurations using button 5 (the up arrow). This will present:

- DD1
- DD2 + 1P (one pump)
- DD2 + 2P (two pumps)

Select DD2 + 1P and press button 2 to 'ACCEPT'.

2

## Measure return temperature

The default setting is 'NO'. 'Yes' is only selected if an extra sensor has been purchased (accessory R5409) and installed for fault diagnosis.

Use buttons 5 and 4 (up and down arrows) to switch between 'NO' and 'YES', and press button 2 to 'ACCEPT'.

3

## Bypass advanced setup

The default settings for advanced setup are:

- BMS connection --> open
- Controller ID\* --> 1

In the majority of installations just select 'No' to bypass. For more information refer to p.11.

\* Controller ID refers to the controller number, you can have up to 16.

4

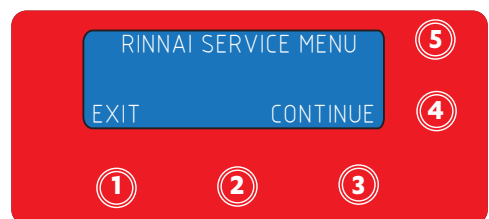
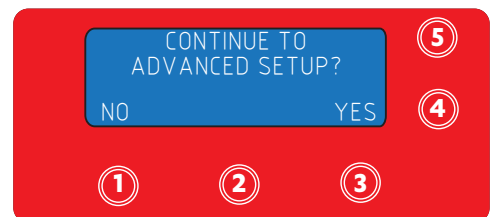
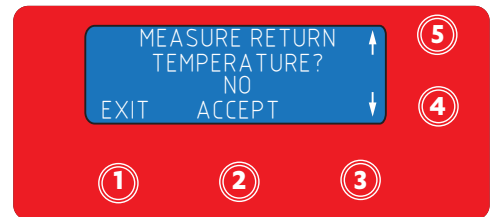
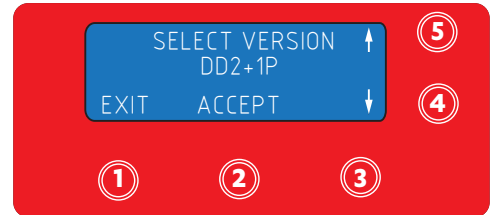
## Access the Rinnai service menu

To reduce the chance of the system shutting down due to failed ignition of the Rinnai INFINITY units the pump needs to be set to interrupt. Selection is between 25-31 minutes, for the frequency, and a range of 15-45 seconds, for the length of time. Rinnai recommend 28 mins/ 30 secs, refer p.10 for setting instructions.

5

## Blank the unused GPO

Use the blanking plate in the controller kit, plug the unused LHS electrical connection—the RHS is activated for pump control.



Blanking plate

# Programming - DD400-1000 dual pump

To set the Demand Duo system for two pumps ensure you have selected the DDSTAT mode by following the instructions on p.6.

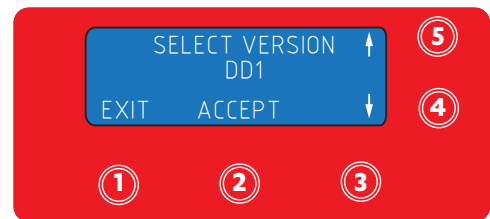
1

## Select DD2 + 2P

You can cycle through the system configurations using button 5 (the up arrow). This will present:

- DD1
- DD2 + 1P (one pump)
- DD2 + 2P (two pumps)

Select DD2 + 2P and press button 2 to 'ACCEPT'.

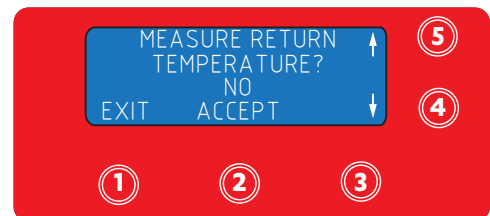
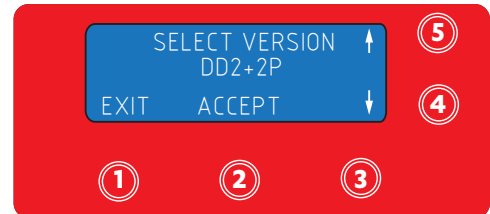


2

## Measure return temperature

The default setting is 'NO'. 'Yes' is only selected if an extra sensor has been purchased (accessory R5409) and installed for fault diagnosis.

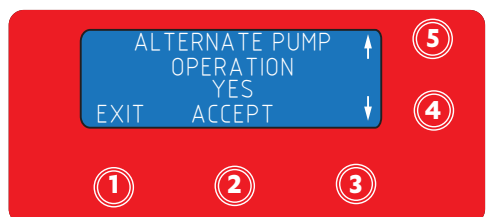
Use buttons 5 and 4 (up and down arrows) to switch between 'NO' and 'YES', and press button 2 to 'ACCEPT'.



3

## Pump setup

The pump setup screens allow you to add an extra pump into the system configuration and also set the time for when the pumps swap over, 12 or 24 hours.



4

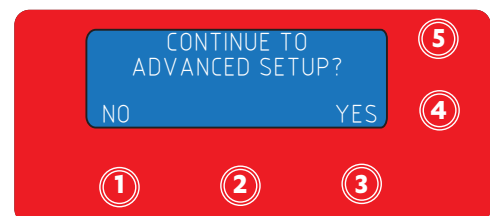
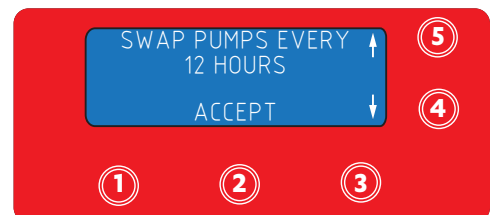
## Bypass advanced setup

The default settings for advanced setup are:

- BMS connection --> open
- Controller ID\* --> 1

In the majority of installations just select 'No' to bypass. For more information refer to p.10.

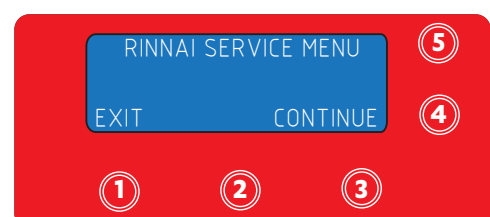
\* Controller ID refers to the controller number, you can have up to 16.



5

## Access the Rinnai service menu

To reduce the chance of the system shutting down due to failed ignition of the Rinnai INFINITY units the pump needs to be set to interrupt. Selection is between 25-31 minutes, for the frequency, and a range of 15-45 seconds, for the length of time. Rinnai recommend 28 mins/ 30 secs, refer p.10 for setting instructions.





# Programming - circulating ring main

To set the Demand Duo as a circulating system ensure you have selected the DDP CDEL mode by following the instructions on p.6 (hold button 2 then press 5 >4>5>5 in quick succession).

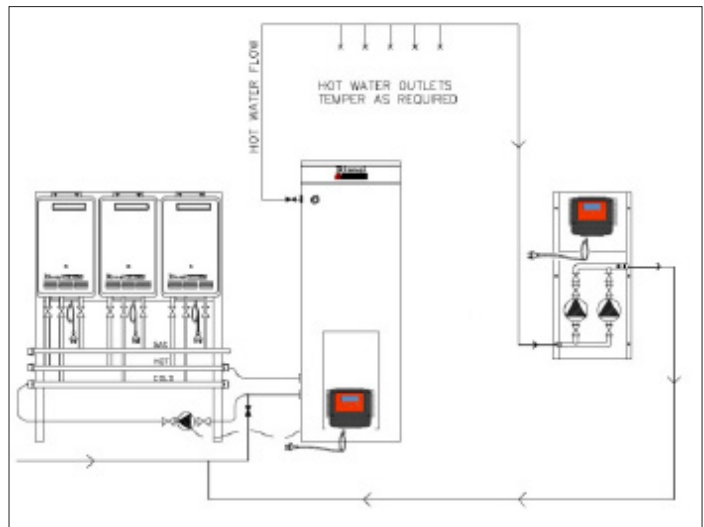
## Demand Duo with a ring main

The system in this configuration\* should have the Demand Duo controller set to the interrupt settings shown on the next page, and the ring main pump controller, often purchased as an additional accessory, should be left in continuous mode.

If the Demand Duo controller has not been set, do the below steps.

### \* Typical Demand Duo ring main setup

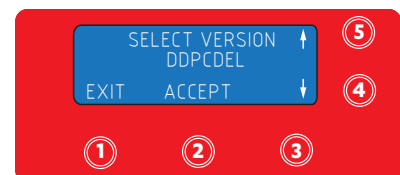
Tank set temp. 65 °C, tank low limit temp. 65 °C, and the ring main pump controller set to 5 °C.



1

### Select DDP CDEL

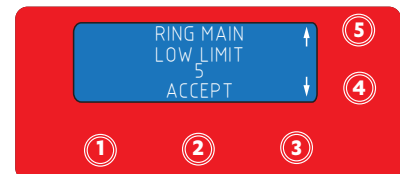
Use buttons 4 and 5 to select the system, in this instance 'DDP CDEL', press button 2 to 'ACCEPT'.



2

### Determine system temperature fluctuation

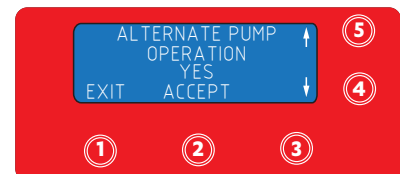
This screen lets you select the allowable temperature fluctuation below the set point. The options are 5 or 10 °C, to allow for losses within the building's flow and return system.



3

### Pump setup

The pump setup screens allow you to add an extra pump into the system configuration and also set the time for when the pumps swap over, 12 or 24 hours.



4

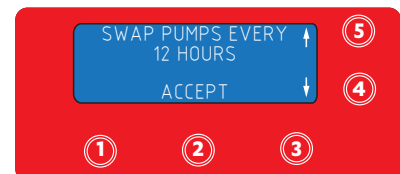
### Bypass advanced setup

The default settings for advanced setup are:

- BMS connection --> open
- Controller ID\* --> 1

In the majority of installations just select 'No' to bypass. For more information refer to p.10.

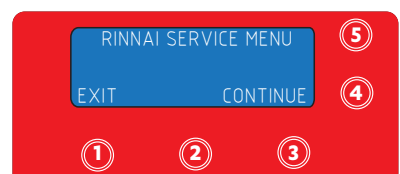
\* Controller ID refers to the controller number, you can have up to 16.



5

### Access the Rinnai service menu

To reduce the chance of the system shutting down due to failed ignition of the Rinnai INFINITY units the tank pump needs to be set to interrupt. Selection is between 4-10 minutes, for the frequency, and a range of 15-45 seconds, for the length of time. Rinnai recommend 10 mins/ 30 secs, refer next page for setting instructions.



# Programming - Rinnai service menu

This mode is accessed if setting up the system and controller for applications that may experience high winds, where the Rinnai INFINITY commercial units could lock out on occasion due to the wind stopping ignition or an interruption to the gas supply. Setting up the system to automatically restart/reset could avoid costly service callouts.

1

## Access Rinnai service menu

Hold down button 5 and press the following buttons in quick sequence:

**Hold 5:** 1 > 3 > 1 > 1 > Press button 3 to 'CONTINUE'

2

## Pump operation

This allows the option of alternating or boost. Select and press button 2 'OK'. Alternating is the preferred option, but boost will energise both pumps simultaneously, for ringmains that are poorly designed and experience considerable heat loss.

3

## Changing mode

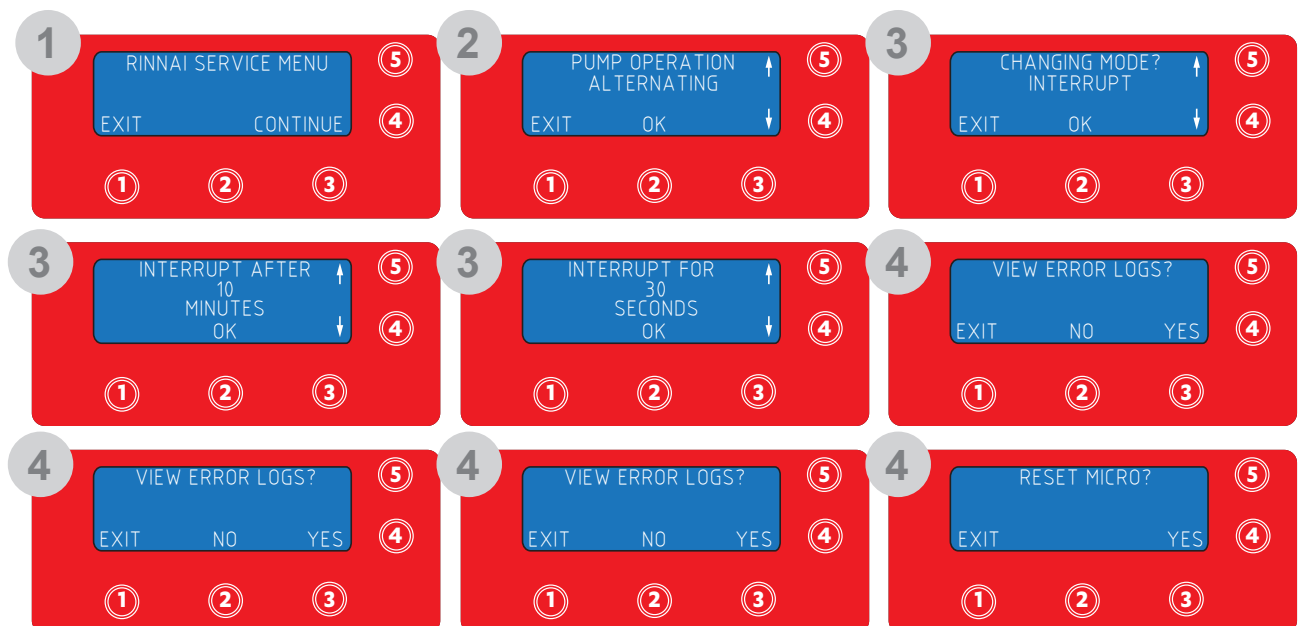
Interrupt mode breaks the power supply to the pumps for a short period of time, and allows for the Rinnai INFINITY commercial units to be stopped. Select interrupt and press button 2 'OK'.

There are a series of options within this feature that allow you to select when the interrupt mode activates, and the length of time the power remains off. Select 'INTERRUPT AFTER' and enter 28 minutes for DDSTAT, and 10 minutes (DDPCDEL), and 'INTERRUPT FOR' 30 seconds (range 15-45 seconds).

4

## Reset pump and error settings

Once interrupt mode has been programmed there are three more screens; reset pump run hours, view and clear error logs, and the option to clear all the errors and settings by resetting the micro.



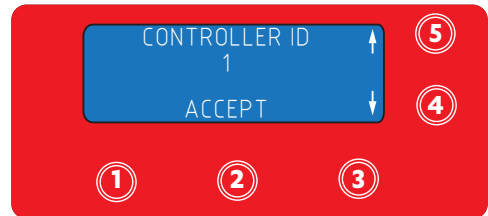
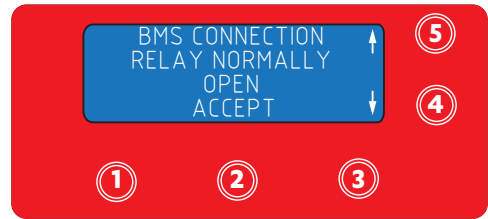
# Advanced setup screens

## Advanced setup

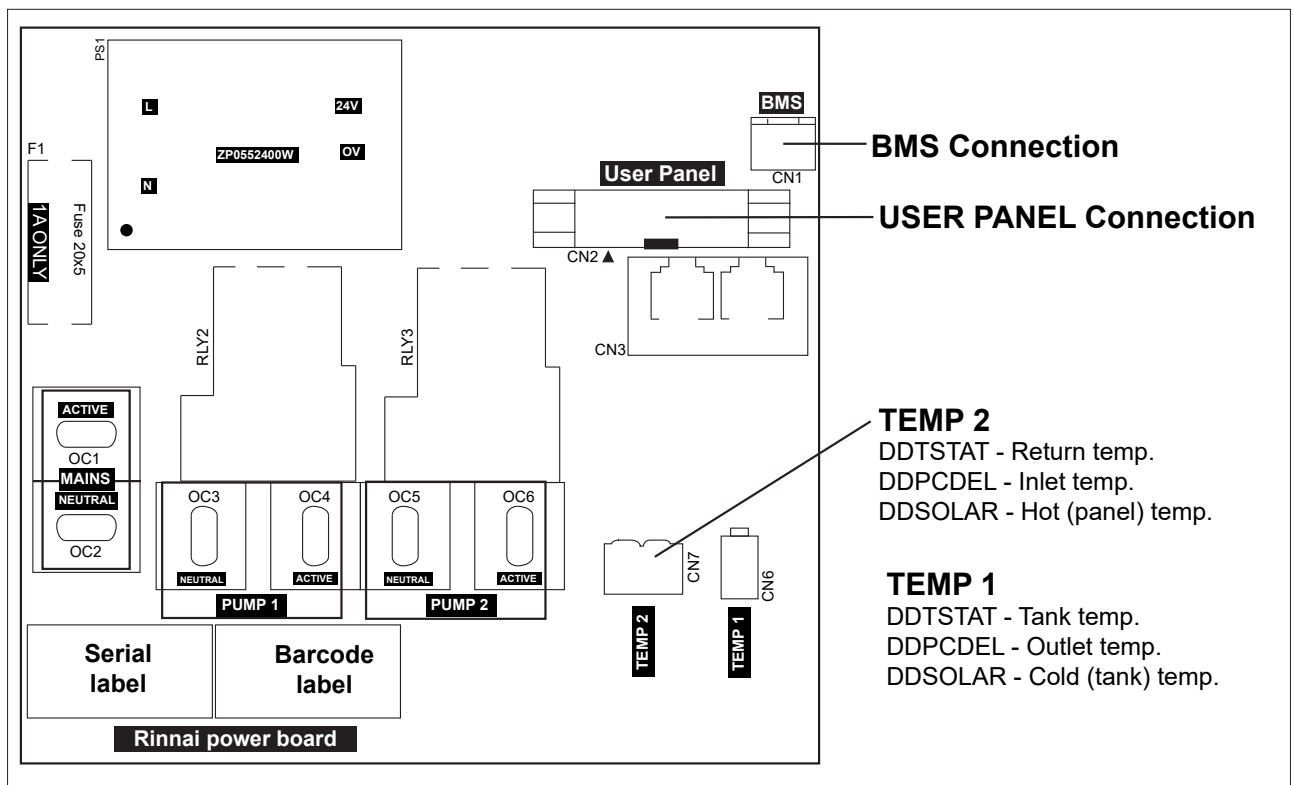
Choose if advanced settings are required. This allows you to select an open or closed option for a BMS connection relay, and select the number of controllers (1-16).

- BMS connection  
Default is open.
- Controller ID  
Default is 1.

Once the relevant controller ID is accepted the display will revert back to the default screen.



## BMS connection on PCB



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