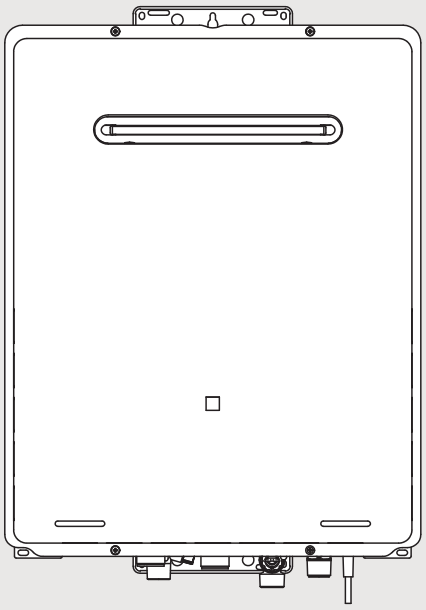
MODEL:

HD56kWe external (REU-AM3237WC-ZK)



INFINITY HD56kWe continuous flow water heater

Installation guide

Rinnai

Important

This appliance must be installed in accordance with:
- Manufacturer's installation instructions
- Current AS/NZS 3000, AS/NZS 3500, AS/NZS 5601.1 and G12/AS1

For use with Natural Gas or Universal LPG as indicated on the appliance.

Not suitable as a spa or swimming pool heater.
Not suitable for hydronic applications.

Appliance must be installed, commissioned and serviced by an authorised person, being in New Zealand a licensed gasfitter.

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).

Rinnai New Zealand Limited
105 Pavilion Drive, Mangere, Auckland
PO Box 53177, Auckland Airport, Auckland 2150

Phone: (09) 257-3800
Email: info@rinnai.co.nz
Web: rinnai.co.nz
youtube.com/rinnainz
facebook.com/rinnainz

Contents

Specification 4
Dimensions.....5
Appliance location 6
General installation information.....7
Water delivery temperature 8
Water controller installation 9
HD56kWe controller communication cables.....10
Commissioning.....11
PCB interface and dip switch settings 12
Appliance programming parameters 13

Before installation

Unpack the appliance and check for damage. DO NOT install any damaged items.

Check all components and that the correct gas type has been supplied.

Get an overview of the steps required before starting the installation. Failure to follow these instructions could cause a malfunction of the appliance. This could result in serious injury and property damage.

These instructions apply only to the continuous flow water heater model listed on the front of this guide.

Specification

Designed and made in Japan, the Rinnai INFINITY HD56kWe model is an external continuous flow gas hot, water heater with inbuilt frost protection and status monitor. It has electronic ignition and requires electricity to operate.

The INFINITY HD56kWe is factory preset to 50 °C, but can be set to deliver higher temperatures, up to 85 °C, making them ideal for commercial applications.

Specification summary
- Colour Silver
- Input LPG 20.1-245 MJ/h
- Input NG 20.1-250 MJ/h
- Output 56.4 kW (LPG) 56.8 kW (NG)
- Efficiency 82 %

Suitability
HD56kWe units are primarily designed for commercial applications, but can be used for larger hot water capacity residential projects.

They are not suitable as a spa or swimming pool heater, or for hydronic heating.

Hard or acidic water will need to be treated to use this product.

Capacity
Hot water capacity 1.5-37 litres per minute.

Nominal water capacity 32 litres per minute at a 25° rise (1920 L/h).

Connections

Hot water outlet	R¾ (20 mm)
Cold water inlet	R¾ (20 mm)
Gas supply	R¾ (20 mm)

Exhaust system: Forced flue

Ignition system: Direct electronic ignition.

Line pressures
NG: 1.13-3.0 kPa LPG: 2.75-3.0 kPa

Standing and flowing pressure must be less than 3.0 kPa.

Ingress protection rating
IPX5

Power consumption

Normal	87 W
Standby	2 W
Frost protection	88 W

Noise level
55 dB(A)

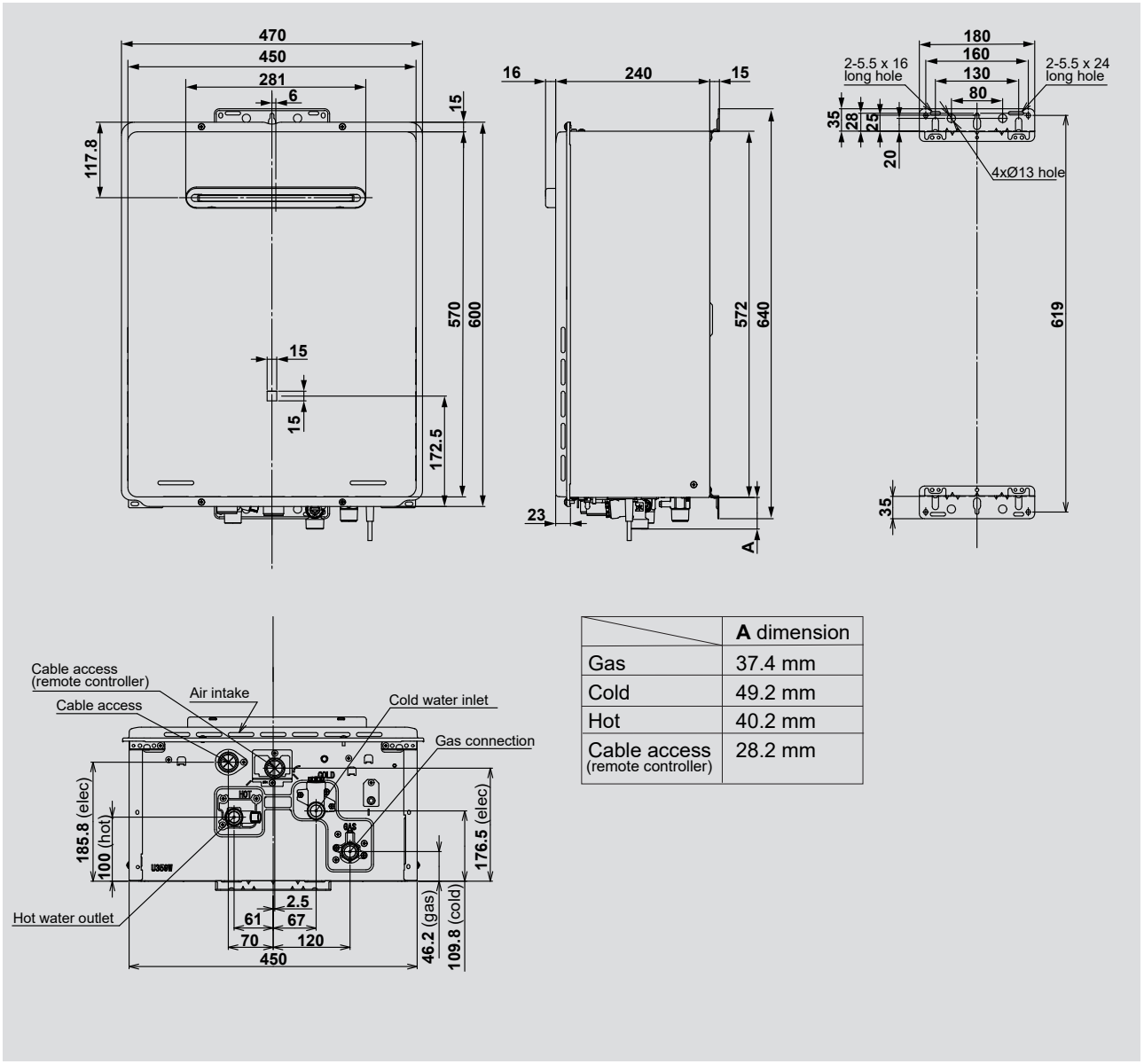
NOx af: 40 ppm

Safety devices
- Flame failure
- Boil-dry protection
- Overheat protection (OHS)
- Fusible link
- Pressure relief valve
- Combustion fan rpm check

Water supply
Nominal operating pressure: 200-1000 kPa
Minimum water flow: 1.5 litres per minute

Weight
23 kg

Dimensions



	A dimension
Gas	37.4 mm
Cold	49.2 mm
Hot	40.2 mm
Cable access (remote controller)	28.2 mm

Service connection points
An approved full flow isolation valve and disconnection union MUST BE fitted to the cold water inlet. A non-return valve is not required unless stipulated by local regulations.

Isolation valves MUST NOT be fitted directly to the appliance.

It may be necessary to fit a temperature limiting device for delivery to areas used primarily for the purposes of personal hygiene, refer page on ‘Water delivery temperature’ for more information.

Purge gas and cold water supply lines to remove air and swarf before final connection. Swarf in the gas or water supplies may cause damage, a common problem, which is not covered by warranty.

Appliance location

This appliance is designed for outdoor installations only. It MUST BE located above ground in open air with natural ventilation, without stagnant areas, where gas leakage and products of combustion can be rapidly dispersed by wind and natural convection.

This appliance MUST BE placed as close as possible to the most frequently used hot water outlet(s) to minimise the delay for hot water delivery[1]. For installations where the distance between the water heater and outlets is considerable, a flow and return system can be used to minimise the waiting time for hot water delivery. Alternatively multiple appliances can be strategically placed to serve outlets with minimal delay.

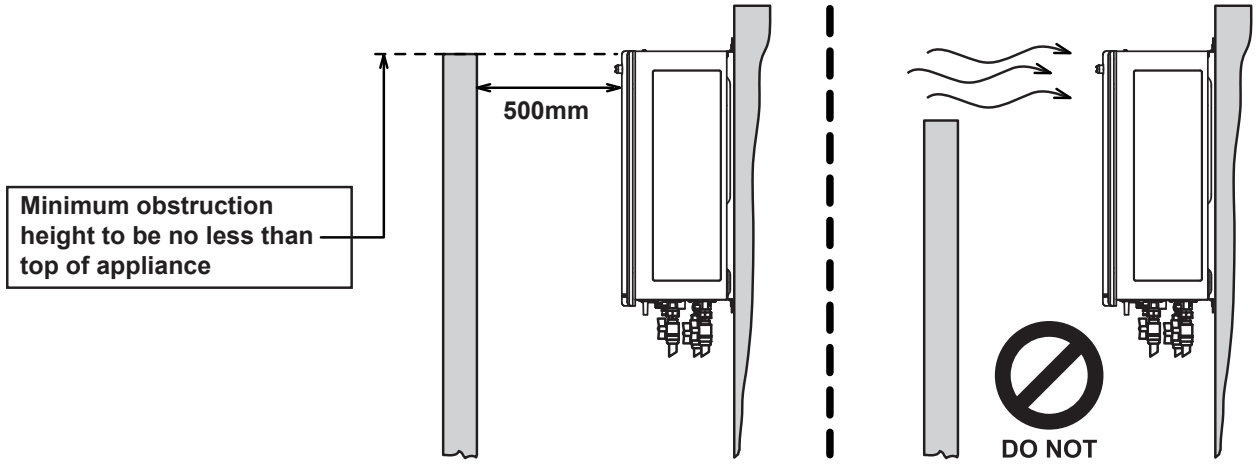
An AC 230 V, 10 A earthed power point must be provided adjacent[2] to the appliance. This power point must be weatherproof. It must be clear of the gas and water connections to the appliance and also the flue exhaust and water pressure relief valve. The power cord of the appliance is 1.5 m long.

All appliances MUST BE installed to ensure access can be gained without hazard or undue difficulty for maintenance and servicing. Sufficient clearances shall allow access and removal of all serviceable components. Appliances should not be mounted more than 2.5 m above the ground or floor level unless the customer can arrange permanent and safe access, or can provide another means of safe access.

The appliance MUST BE mounted on a vertical structure with the water and gas connections on the underside pointing downwards.

Location of the flue terminal MUST BE in accordance with Section 6 and Figure 6.2 of AS/NZ 5601.

Horizontal obstructions
AS/NZS 5601 states a minimum horizontal clearance of 500 mm between a building structure and obstruction facing the terminal. At 500 mm the obstruction needs to be the full height of the unit, as shown below, and not a partial obstruction. A partial obstruction of less than 1 m could result in wind pushing the flue gases back into the flue terminal.



IMPORTANT

There **MUST** be **NO** partial obstructions to the appliance front cover or any other part of the appliance casing. This will avoid the appliance from failing to operate under windy conditions.

[1] Rinnai recommend a maximum pipe run of 10 m.

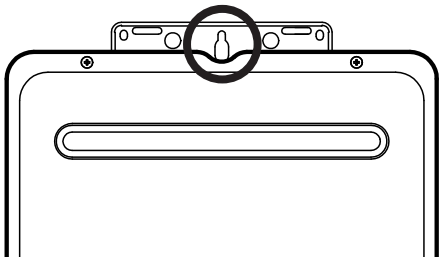
[2] Power point can be within the pipe cover if a pipe cover is installed—must comply with AS/NZS Wiring rules. Rinnai DOES NOT recommend cutting off the plug and hard wiring as this will require specialist trades to disconnect the unit every time the appliance is serviced.

General installation information

Securing the Rinnai INFINITY
The wall structure on which units are mounted MUST BE capable of supporting the weight of the appliance and associated pipe work.

Ensure that suitable fixing screws or bolts are used to secure the unit to the wall, in accordance with AS/NZS 5601 section 6. Wooden plugs shall not be used.

The top bracket has a keyhole slot so that the appliance can be positioned by hanging it on one screw. Once in position the appliance can be secured with appropriate fixings.



The appliance can be mounted directly against the wall or structure. There is no need to use non-combustible sheeting or leave an air gap between the appliance back panel and the wall or structure to meet the temperature hazard requirements of AS/NZS 5601.

Pipe sizing
If the gas pipe sizing is insufficient the appliance won't perform properly. Gas pipe sizing must consider the gas input into this appliance as well as other gas appliances in the premises. The gas meter and regulator must be specified for this gas rate.

An approved sizing chart such as the one in AS/NZS 5601 should be used. Refer specification for gas consumption details.

Water pipe sizing and layout should be performed in accordance with AS/NZS 3500. All hot water pipe work should be insulated to optimise performance and energy efficiency.

Water supply
The appliance is intended to be permanently connected to the water mains.

Refer specification for operational water pressure limitations. Approved pressure limiting valves may be required if the maximum rated water supply pressures are exceeded. To achieve the rated flow, the minimum water supply pressures must be met.

The water heaters will operate at lower pressures but will not achieve the rated flow. Contact Rinnai for gravity fed or low pressure installations.

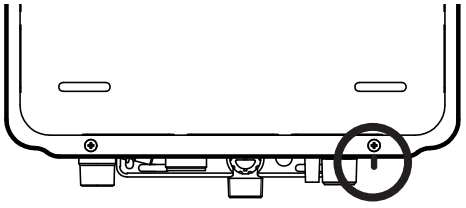
Water chemistry and impurity limits are detailed in the operation guide within the warranty section. Most metropolitan water supplies fall within these requirements.

If you are unsure about the water quality contact your water authority. If sludge or foreign matter is present in the water supply, a suitable filter or strainer is required in the water supply to the water heater to prevent unwarranted damage and loss of performance.

Frost protection
Frost protection operates automatically, as long as the appliance is connected to the electrical power supply, by activating when the temperature inside the unit drops below 3.5 °C[1], and turns off once the temperature inside the unit reaches 7 °C[1].

[1] Approximate temperatures

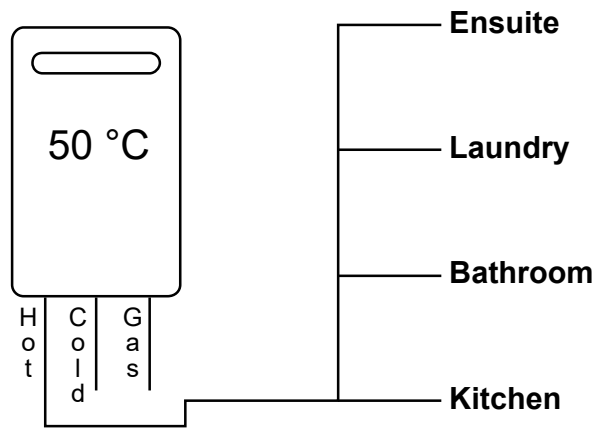
Frost protection thermistor
The HD56kWe model has an external thermistor to control frost protection. It is a small black indicator located on the bottom right hand side of the unit, directly underneath the cover screw (circled below). The frost protection thermistor needs to be exposed to the outside air to correctly function—do not insulate the frost protection circuit will not work correctly.



Water delivery temperature

Rinnai INFINITY units installed without controllers

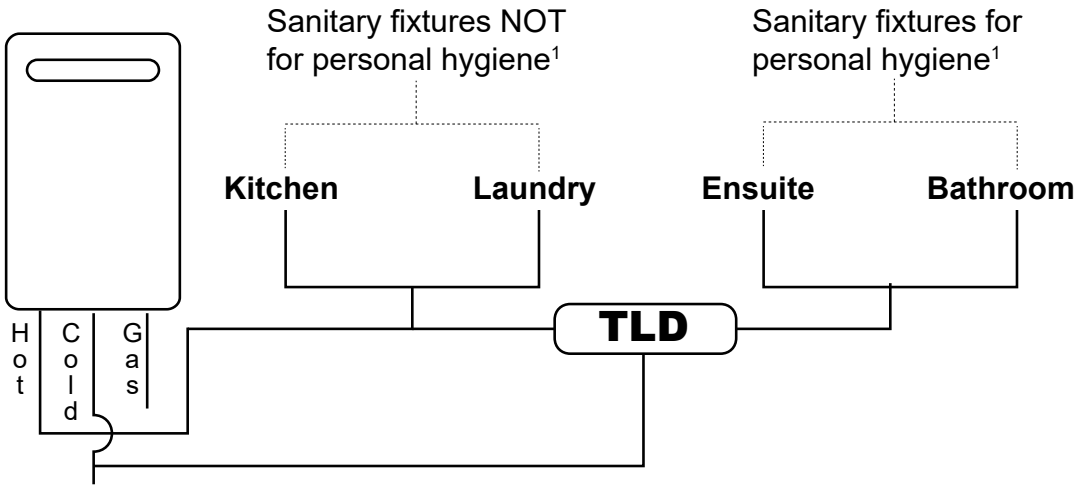
Diagram 1: Appliance set internally to 50 °C



NOTE

Minimum length of pipe from hot outlet to nearest sanitary fixture **for personal hygiene** - two metres.

Diagram 2: Appliance set internally to greater than 50 °C



(TLD = Temperature Limiting Device[2])

[1] Refer G12/AS1 6.14.1

[2] Refer G12/AS1 tables 8A and 8B for suitable valves for the application. For tempering valves of 8B ensure the manufacturer specifies them as suitable for use with continuous flow water heaters.

Water controller installation

The maximum number of controllers that can be fitted is **four**, refer water controller configurations section below.

General information
Other manufacturers water controllers are NOT compatible with Rinnai water heaters. Water controllers MUST NOT be used with any solar boost water heater. Rinnai water controllers bought in from other countries are not compatible with Rinnai appliances sold in New Zealand.

Water controllers and transceivers (for those with wireless controllers) DO NOT contain serviceable parts and must only be serviced by an authorised person.

Master controller
Only one master controller can be designated as a 'master' water controller. This water controller is normally used in the kitchen. The remaining controllers are 'sub-controllers' and are for use in bathrooms, toilets, and laundries. The temperature limit for all sub-controllers is 50 °C, this is a safety feature, to reduce the risk of burns in these areas. A master controller MUST NOT be installed in a bathroom.

Water controller configurations
- A maximum of four Compact controllers (MC-601) can be fitted.
- Only one master controller can be installed. This can be a Kitchen Deluxe[1], or any other Compact controller (MC-601).

  [1] When a Kitchen Deluxe controller is fitted, it will always function as a master controller, this is the default setting and cannot be changed.

- In addition to a master controller, up to three additional controllers can be fitted

Controller location
- Do not install water controllers near a heat source, such as a cook top, stove or oven. Heat steam, smoke, and hot oil may cause damage.
- Do not install water controllers outdoors unless protection from water/dust ingress and sunlight are provided.
- Do not install water controllers in direct sunlight.
- Do not install water controllers against a metal wall unless the wall is earthed in accordance with AS/NZS 3000.
- Water controllers must not be installed where chemicals such as benzene, alcohol, turpentine, hydrogen sulphide, ammonia, chlorine or other similar chemicals are in use.

The water controller is water resistant, however excessive exposure to water may result in damage. Durability is improved when positioned OUTSIDE the shower recess.

- Avoid direct exposure to water or steam as these may cause the controller to malfunction.
- Water controllers must be installed in shaded and clean locations. They should be fitted out of reach of children (suggested height 1.5 m from the floor), and installed at least 400 mm above the highest part of a sink, basin or bath.

When cleaning your water controller use only a damp cloth and mild detergent.

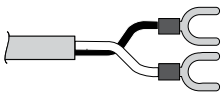
HD56kWe controller communication cables

Wired water controllers operate at an extra low voltage (12 V DC) which is supplied from the water heater, a 10 m long communication cable is supplied for connection to the water heater. Only Rinnai supplied communication cables may be used.

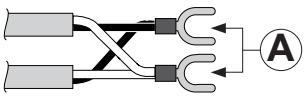
The water heater end of the cables is fitted with spade terminals. Only two pairs of cables (four spade connectors in total) may be terminated. When attaching three or four cables it is necessary to join the cable terminators as shown below.

For each pair cut off the existing spade connectors and re-terminate each pair into a new spade connector (A). Spade connectors are available from your local electrical component retailer

Single cables can be used when terminating up to two communication cables.



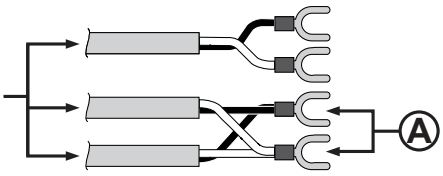
Paired cables are to be used when terminating three or four communication cables.



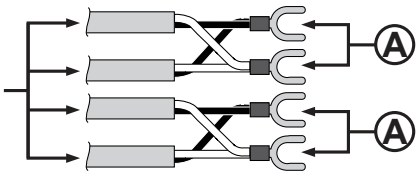
Connecting one or two communication cables
Follow steps one through five below to terminate the cables to the water heater.

Connecting three or four communication cables
To connect three or four cables, separate all the cables to be fitted into pairs.

When terminating three cables



When terminating four cables



Follow steps one through five below to terminate the joined cable pairs to the water heater.

1. Isolate the power supply by switching the power point off and removing the power plug of the water heater from the electric power socket.

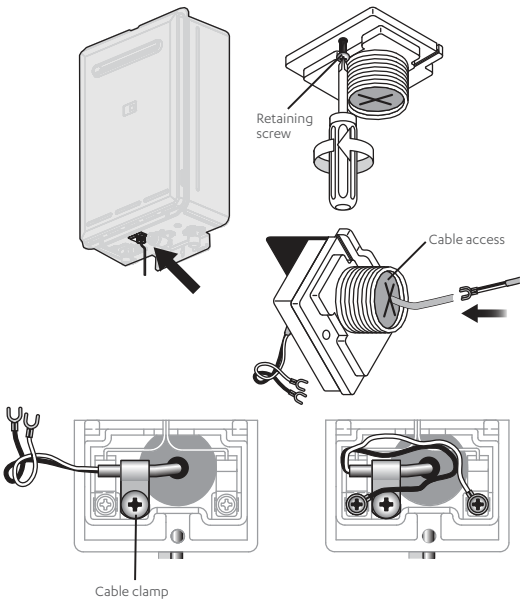
2. Removing the retaining screw of the cable connector at the base of the unit.

3. Swing the cable connector door open and thread the cable through the weather seal of the cable access hole, allowing sufficient cable length so that the sheath of the cable can be secured with the cable clamp supplied with the transceiver.

4. Loosen the screw terminals and connect the cable spade connectors to these terminals and re-tighten.

   Polarity is not important, either wire colour can be connected to either terminal.

5. Return the cable connector to the original position, taking care not to damage the cable wires in the process, and replace the retaining screw.



Commissioning

AS/NZS 5601.1, clauses 2.6.8 and 6.11.2. states that every part of the gas installation shall be commissioned prior to initial use. It is the installer's responsibility to ensure all current AS/NZS 5601 requirements are met.



The appliance must be tested after installation. Ensure the building occupants do not have access to the hot water outlets during this procedure.

Please note
The Rinnai INFINITY HD56kWe model comes with a factory preset outlet temperature of 50°C. The high and low gas operating pressures are also factory preset. Under normal operating conditions the operating pressures do not require adjustment during installation. Make adjustments ONLY if the unit is not operating correctly and all other possible causes for incorrect operation have been eliminated.

Inlet supply pressure MUST BE checked and set within the operating parameters of the appliance in all instances. If the appliance cannot be adjusted to perform correctly call 0800 RINNAI (0800 746 624) for assistance.

Commissioning steps

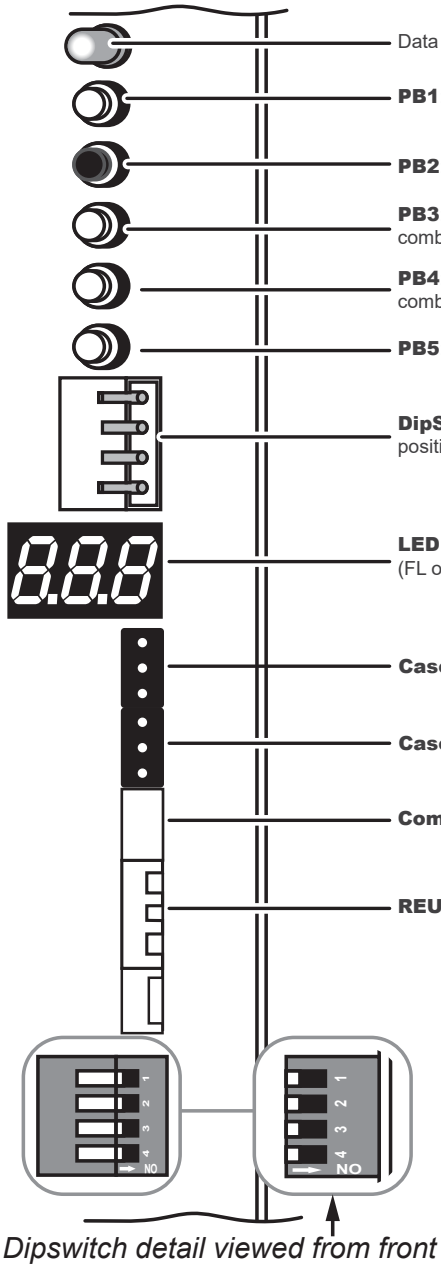
1	Flush water pipes and gas line	Before final connection of the water heater, flush the gas, hot, and cold water supply lines. Swarf in the gas or water supplies may cause damage, a common problem, which is not covered by warranty.
2	Connect the gas line	
3	Purge the gas line of air	
4	Final connection test	
5	Check supply pressure	Operate ALL other gas appliances at their maximum rate. With all gas appliances on maximum the supply pressure must read between 1.13-3.0 kPa on Natural Gas and 2.75-3.0 kPa on LPG. If the supply pressure is lower, the gas supply is inadequate and the appliance will not operate to specification. It is the installer's responsibility to check the gas meter, service regulator and pipe work for correct operation and sizing, and rectify as required.
6	PCB settings checked	If factory default settings are changed check the PCB to ensure it is set correctly.
7	Operate and check for gas leaks	Replace the appliance front cover otherwise the unit won't operate correctly, and operate and test for gas leaks using an electronic leak detector.
8	Operational test	Confirm the water flow and hot water delivery temperature using a thermometer. If water controllers are fitted, it is necessary to test their operation through the complete range of functions, refer separate instructions provided with the water controllers.
9	Check cold water inlet filter	Inspect and clean the water inlet filter. This may need to be repeated to ensure the filter remains clear, especially on new installations. If you feel the customer is capable of doing this then show them how to inspect and clean the water filter as well.
10	Customer handover	After testing is completed, explain to the customer the function and operation of the water heater and water controllers (if fitted). Also talk to them about: • The gas, power, and water connections • How frost protection works • Procedure for draining the water heater • Where to find the data plate • Maintenance and servicing If the customer is not there try and contact them by phone to discuss these important points. Ensure the installer details section is completed in the operation guide, the commissioning checklist has been completed and signed, and that the guide and checklist are left with the customer.

PCB interface and dip switch settings

Basic operation of the PCB interface

- To place PCB into programming mode, press and hold PB2 (red button) until the LED digital display shows ‘01A’ then release. Upon release the current set value will be displayed.
- To change to another menu, press PB3, each press of the button will select the next available menu.
- To alter a value, press PB4, each press of this button will select the next available value and SET the value.
- To exit the programming mode press and hold PB2 (red button) until the LED digital display goes blank.

Note:
If no buttons are pressed the PCB will automatically exit programming mode after 10 minutes, or when setting the gas pressure after 20 minutes. To exit programming mode at any time press and hold PB2 (red button) until the LED digital display goes blank. Exiting program mode sets any of the values last viewed as the new current value.



Dipswitch detail viewed from front

Data transfer between PCB’s
It is possible to transfer the settings of one PCB to another, via the use of the data transfer function and a communication cable. The data function is used primarily when a PCB changeover is required. The PCB replacement and data transfer MUST BE performed by a licensed gasfitter.

Consult the relevant Rinnai INFINITY service manual or contact Rinnai regarding PCB changeover and data transfer.

Appliance programming parameters

The table below lists all the available programming menus and parameters. Not all menus are specific to appliance commissioning.

Table 1: Programming menus

Menu	Menu description	Value							
		A	b	C	d	E	F	H	J
	Factory default settings								
01	Fixed / max. temperature (refer Table 2 below)	50 °C	n/a	n/a	n/a	n/a	n/a	n/a	n/a
02		55 °C	75 °C	65 °C	60 °C	**50 °C**	42 °C	75 °C	85/75 °C
03	Country	**AU/NZ**	n/a	n/a	n/a	n/a	n/a	n/a	n/a
06	Gas type	n/a	ULPG	NG	n/a	n/a	n/a	n/a	n/a
07	Auto reset	OFF	**ON**	n/a	n/a	n/a	n/a	n/a	n/a
08	50 °C delivery adjustment temp.	**Tset-2℃**	Tset+0℃	Tset+1℃	Tset+2℃	Tset+3℃	Tset+4℃		
10	Post fan time (seconds)	**65**	120	240	480	n/a	n/a	n/a	n/a
11	OFF water flow rate	**+3 °C**	+6 °C	n/a	n/a	n/a	n/a	n/a	n/a
14	Units in standby (EZ connect)	**2**	1	n/a	n/a	n/a	n/a	n/a	n/a
15	Cascades cable connection	**Secondary (2-24)**	Primary	n/a	n/a	n/a	n/a	n/a	n/a
16	Units in standby	**1**	2	3	4	5	6	n/a	n/a
21	Low activation mode (ON-OFF control)	**ON**	OFF	n/a	n/a	n/a	n/a	n/a	n/a
22	Error code 14 (OHS) lockout	**OFF**	ON	n/a	n/a	n/a	n/a	n/a	n/a

Table 2 - Temperature settings

		Menu # 01			
		A		b	
		No controllers	With controllers	No controllers	With controllers
		Fixed temp.	Max. set temp.	Fixed temp.	Max. set temp.
Menu # 02	A	55 °C	55 °C	55 °C	55 °C
	b	75 °C	75 °C	55 °C	75 °C
	C	65 °C	65 °C	55 °C	65 °C
	d	60 °C	60 °C	55 °C	60 °C
	E	**50 °C**	50 °C	50 °C	50 °C
	F	42 °C	42 °C	42 °C	42 °C
	H	85 °C	75 °C	40 °C	40 °C
	J	85 °C	75 °C	70 °C	75 or 85 °C

01 / 02 Factory preset temperature

The Rinnai HD56kWe will come factory preset to 50 °C (01A + 02E), the default setting. If this needs changing, refer Table 2 above.

07 Auto reset

Relates to the status of the unit should a power disruption occur. For both settings 07A and 07b, if the unit is on, with a fixed temperature setting, before a power disruption occurs, the unit will auto reset to come back on when the power is restored. The A & b settings are only used if controllers are connected. Contact Rinnai if you need more information.

10 Post fan time

To reduce the HEX temperature after combustion to mitigate lime scale buildup.

11 OFF water flow rate
OFF water flow rate, the temperature of the outgoing hot water is monitored by an inbuilt sensor. If the temperature of the outgoing hot water rises more than 3 °C (default, or 6 °C if 11b) above the selected temperature shown on the digital monitor or the preset limit, when water controllers are fitted, the burner will automatically go out. This is a safety feature.

Please note: To change menu 11, menu 21 needs to be OFF (21b).

14 EZ connect
N/A to NZ, this cable is not stocked.

15 Cascades cable connection
With the use of a cascade cable (one cable is needed for each water heater) up to 24 water heaters can be electronically connected. This connection will rotate water heater operation to ensure equal usage among the system and enables all water heaters connected to modulate operation and function as one heating source.

Primary; select the water heater intended to be the primary water heater and set to 15b.

16 Units in standby
Setting only available if 15b is selected. Adjust the parameter setting of the primary unit to set the number of water heaters in standby. Standby units will maintain operation with the water flow control valve in the open position. The remaining water heaters will maintain the water flow control valve in the closed position.

21 Low activation mode
Under normal circumstances this will not need adjustment. It is only used in counties where the incoming water temperature is high and the set temperature of the unit is low. This function increases the water flow rate to activate the water heater. This program is only available when the temperature is set 60 °C or below.

22 Error code 14
If the unit experiences error 14 (HEX water >97 °C, this determines how the error is handled:

- 22A OFF (default), the water heater resets and operation will resume once the heat exchanger water temperature drops below 82 °C. To reset this error code, water flow rate needs to be zero—all taps need to be turned off.

- 22b ON, if error 14 occurs the unit will not restart. A service person is required to determine that there is no fault with the unit, this is a safety feature, and is **predominantly used in commercial applications where the INFINITY is feeding a storage tank**. Only a qualified service person can reset the unit by pushing PB1 and PB2 simultaneously for more than five seconds.



22b ON is used where a HD56kWe is combined with a storage tank and the relief capacity of the storage tank is less than 56 kW. Where this is the case the attending service person MUST reset the parameter back to 22b ON and check this before leaving the site.

Rinnai.co.nz

Tel: 0800 746 624
http://www.youtube.com/rinnainz
http://facebook.com/rinnainz

U359-0811 (01)
REU-AM3237(NZ)