Gree Ultra Series Water Heater

The Gree Ultra series Water Heater has been developed based on the Reverse Carnot Cycle. Driven by a small amount of electrical power, with refrigerant as the thermal transfer medium, the system continuously absorbs low grade heat from the surrounding ambient air, and transforms this into usable high grade heat, which is then transferred to the water via a high efficiency heat exchanger to ensure reliable, stable domestic hot water supply.

The Gree Ultra series is an energy efficient, compact hot water heating system. But don’t let its compact size fool you, the Ultra series can supply between 31-60kW of heating power. And with a wide operating temperature range of -26°C to 46°C you can rest assured you will have plenty of hot water all year round.

This operation principle is very similar to a heat pump air conditioner. The heat pump air conditioner absorbs heat from the ambient air, and then supplies the heat to indoor air. The Ultra Hot Water Heat Pump uses the heat absorbed for heating production or domestic hot water. The Ultra system is around 3 times more efficient than a conventional electrical water heater meaning you save money on your power bill and reduce your environmental impact.

Wide Range of Operation Conditions

The Ultra Hot Water system is specifically designed to be flexible in its application. It is able to operate at ambient temperatures between -26°C and +46°C, making it perfect for New Zealand conditions, from the Southern Alps to those scorching summer days in central Canterbury.

Professional Heat Pump Hot Water System

By using the optimised professional heat pump hot water system specially developed for low ambient temperature operation the loss of heating capacity at -15°C has been reduced by 8% when compared to a conventional Gree Hot Water Heat Pump System.

Reverse Carnot Cycle

The basic principle of the Reverse Carnot Cycle is to take relatively low temperature heat energy from the outside ambient air and transform it (using refrigeration principles) into high temperature useable heat energy.
Auto-washing

Gree Ultra raises the hot water over 60°C to conduct the disinfection function, sterilising the water and restricting the breeding of bacteria. You can also conduct the auto-washing function by adding detergent and degreasing agent to remove scale, which can be used safely and reliably.

High Water Outlet Temperature

Gree Ultra can be set to any temperature between 35~70°C*. With such a large operating range, it is suitable for many different hot water projects.

Ultra uses an advanced waterway control system with high water outlet temperatures. The water outlet temperature is set at 55°C ex-factory. However the highest water outlet temperature it can reach is 70°C.

In Direct heating operation, cold water will be heated to the desired outlet temperature in a single pass through the unit. In the circulating heating operation the unit will heat a storage tank to the desired temperature.

*Note: This feature is only for Direct Heating Type. While for the Circulating Heating Type, the tank temperature can only be freely set within 30~60°C.

Instant Hot Water

With intelligent water returning technology, Gree Ultra can ensure instant hot water at the tap. You can enjoy hot water without the wait and waste.

High-efficiency Compressor

Ultra Hot Water Heat pumps come with Low Temperature Heat Pump Scroll Compressors. These compressors incorporate flexible scroll design which improves the anti-slugging ability of the compressor. Oil film sealing reduces friction, noise and mechanical energy consumption. Automatic scroll temperature protection (ASTP), a unique low-temperature injection design, improves the reliability in severe conditions and prolongs the lifespan of the compressor.

High-efficiency Heat Exchanger

The Ultra Series Heat Exchangers utilise inner spiral groove copper tubes. The spiral groove improves the heat exchange area for a more compact heat exchanger. The outer of the tubes are stainless steel with a stoving varnish coating for high corrosion resistance and a long lifespan. These heat exchangers have also been designed within turbulent flow flush through, to minimise any fouling that would usually occur on heat exchangers.

Water Level Switch Control

Users can adjust the water storage volume in the hot water tank depending on the expected water consumption. This is especially useful for obvious off-peak and peak hours of water consumption.

The hot water heat pump uses a four digit water level switch control (supplied separately) to control the water level in the tank. This increases the adaptability and operational reliability of your system.

High-efficiency Fan Blade and Motor

Gree Ultra fan blades have been designed using Computational Fluid Dynamics simulation and design. This method of design results in optimised blade shape. Dynamic blade running tests have been conducted to ensure the motors and fan blades match perfectly. The fan motors in the Ultra units are extremely efficient reaching more than 90% motor efficiency. This means they are quieter and have reduced running costs.

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Intelligent Defrosting Function

When the Gree Ultra unit detects the requirement to defrost, the four-way valve reverses, passing the high temperature gas through the outdoor evaporator for fast effective defrosting. When the unit detects the frost on the outdoor coil has melted. The four-way valve switches back to its original position and continues to heat. This auto detection means the unit spends only as much time as it needs to defrosting.

The unit can also distinguish the conditions which are likely to cause frosting on the coils and those where you are not likely to get frosting according to ambient temperature. As a result the unit can adopt different defrosting intervals.

The unit can enter the defrosting mode earlier by judging the thickness of frost on the coil, this is to ensure the water heating capacity and efficiency is maintained.

Power Failure Memory Function

The unit will automatically resume operation in the previous mode when the power recovers after a failure.

Free Setting of Unit On Time

Set the time for turning on the unit to satisfy needs of off-peak power use, to lower operation costs.

Timer, Constant Temperature and Constant Water Level Functions

With timer, constant temperature and constant water level functions, there is more control flexibility for the user.
**Low Temperature Antifreezing Function**

The low temperature antifreezing function can efficiently prevent frost cracking of the heat exchanger.

**Intelligent Antifreezing Function**

If the unit is powered on, when the unit detects that it is going to be frozen, it will automatically start the circulating water pump or operate the unit so as to maintain the temperature in the hot water pipe network to avoid the pipe network being frozen.

**Protection Functions**

- Compressor high pressure protection
- High discharge temperature protection
- Water flow switch protection
- Antifreezing protection
- Compressor low pressure protection
- Water side pressure protection
- Sensor open-circuit/short-circuit protection

**Modular Design**

- Use any combination of up to 16 Ultra units for convenient design and installation.
- With the multiple parallel system setup, even if there is a malfunction that occurs in one of the units, the other units can still operate normally. This means the risk of the system completely breaking down is low, which improves system reliability.

**Centralised Control**

- The controller can switch between controlling a single unit and multiple units (A maximum of 16 units can be controlled). Control functions include ON/OFF, water outlet temperature setting, timer on/off, parameter inquiry, etc.
- If there is a malfunction in any one of the units, it will not influence the operation of the other units. Resulting in a much more reliable system and less down time.
### Performance

#### Capacity

- **Cooling**: kW
- **Heating**: kW

#### Capacity Range

- **Cooling**: (min~max) kW
- **Heating**: (min~max) kW

#### Input

- **Cooling**: kW
- **Heating**: kW

#### Input Range

- **Cooling**: (min~max) kW
- **Heating**: (min~max) kW

#### Energy Label 2011

- **Cooling Stars**: 1.5
- **Heating Stars**: 2.5

#### AEER

- **T1 100% W/W**: 3.142
- **83%**: 3.465

#### ACOP

- **Heat T1 100% W/W**: 3.612

#### Moisture Removal

- **l/h**: 1.8

#### Airflow

- **H/S l/s**: 180

#### Sound Pressure Level (JIS C9612)

- **Indoor db**: 48/46/44/41/37/35/32
- **Outdoor db**: 54

### Electrical

- **Power Supply**: 230V/50Hz/1ph
- **Recommended Circuit Breaker Amp**: 15
- **Current Cool/Heat T1 Amp**: 7.6 / 7.0

### Dimensions and Weights

- **External Dimensions (HxWxD)**:
  - **Indoor**: mm 600x700x215
  - **Outdoor**: mm 700x995x396
- **Nett Weight Indoor**: kg 15
- **Nett Weight Outdoor**: kg 49

### Installation

- **Refrigerant**
- **Piping**
  - **Liquid Line**: mm (in) 6.35 (1/4”)
  - **Gas Line**: mm (in) 12.7 (1/2”)
- **Conn Method Flare**
- **Refrigerant**: R410A
- **Pre-charged amount kg**: 1.33
- **Pre-charged amount m**: 5m
- **Additional gas charge g/m**: 20
- **Power Supply Indoor**: (1.5mm)
- **Control wiring (included)**: 3 Core plus Earth (4 cores) 1mm length 5m
- **Maximum Piping Length**: H/L m 10/25
- **Operating Temperature Range °C**: -7~43

### Warranty

- **2 YEAR COMMERCIAL WARRANTY**
- **5 YEAR DOMESTIC WARRANTY**

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For Installation and Sales:

For Parts and Warranty:

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