Hot Water Heat Pump Catalogue
Why Choose a Hot Water Heat Pump? ........................................ p.4
There’s a lot to consider when choosing heating for your home and many factors that may help you decide. Hot water heat pumps are endorsed by government agencies and consumer advocacy groups as one of the most efficient heating forms available.

Controls ........................................................................ p.5
7-Day Wall Timer and PUHZ Water Flow Interface.

Hot Water Heat Pump Options ....................................... p.6-8
PUHZ-(H)W Series ....................................................... p.7
5~14kW Packaged Hot Water Heat Pumps.
For underfloor heating and/or sanitary hot water.

PUHZ-RP Series .......................................................... p.8
8.0~16kW Split Type Hot Water Heat Pumps.
For underfloor heating, sanitary hot water, swimming pools or spa pools.

Commercial Hot Water Heat Pump Options .................. p.9-13
PWFY-P~AU Series ..................................................... p.11
12.5~25kW Hot Water Modules. Flexibility to create very large systems.
For underfloor heating, pre-heating sanitary hot water, swimming pools or spa pools. Can be installed in conjunction with City Multi commercial VRF air conditioning.

PWFY-P~BU Series ..................................................... p.12
12.5kW Hot Water Module. Flexibility to create large systems for sanitary hot water. Can be installed in conjunction with City Multi commercial VRF air conditioning.

CAHV Series ............................................................. p.13
45kW Packaged Hot Water Heat Pump. Can be combined for a maximum system of 70kW.
For underfloor heating and sanitary hot water.

Sizing guide for underfloor heating, swimming pools and spa pools.

Hot Water Cylinders .................................................... p.14
New Zealand made hot water cylinders manufactured to the highest standards complete with heat exchanger coil designed specifically for use with Mitsubishi Electric hot water heat pumps.
How Efficient Is A Hot Water Heat Pump?

A Co-Efficient of Performance (COP) is a ratio of heat energy produced compared to electrical energy consumed by an appliance. The higher the COP, the less energy is consumed to produce the same amount of heat. A comparison of COPs shows that electric heating has a COP of 1; meaning for every 1kW of energy consumed only 1kW of heat is produced. Gas heating is even lower at 0.85, which means for every 1kW consumed only 0.85kW of useful heat is produced.

Mitsubishi Electric Hot Water Heat Pumps are extremely energy efficient and can achieve COPs between 3-4, meaning they can produce 3-4kW of heat for every 1kW consumed. As no fossil fuels are directly burnt in the operation of a heat pump, CO$_2$ emissions are also greatly reduced in comparison to gas or oil-fired boilers.

How Do Hot Water Heat Pumps Work?

Hot Water Heat Pumps work on a similar principle to a refrigerator; they are able to absorb energy from the surrounding outdoor air and transfer this energy into a refrigerant. The heat energy is upgraded using a refrigerant cycle and this renewable energy is transferred into the water. The R410A refrigerant used in Mitsubishi Electric Hot Water Heat Pumps has zero ozone depletion potential. This refrigerant allows useful heat energy to be absorbed even when the outdoor conditions drop below freezing.

There are two types of hot water heat pump systems: A packaged system - which has the heat exchanger integrated with the outdoor unit, and a split system - which has the heat exchanger positioned right where the hot water is required.
Mitsubishi Electric Hot Water Heat Pumps are one of the most efficient ways to heat water all year round. A highly efficient inverter system utilising an environmentally friendly refrigerant allows the system to continue providing heat even in sub zero outdoor temperatures.

According to the Energy Efficiency and Conservation Authority (EECA), hot water usage accounts for up to 30% of a home’s annual power bill. Hot Water Heat Pumps can provide energy efficient solutions for all applications where water is heated or cooled.

**Unique Benefits of Hot Water Heat Pumps**

**Energy Efficiency**
Hot water heat pumps offer the highest levels of energy efficiency with the ability to provide 3-4kW of heat energy for every 1kW used.

**Lowest Running Costs**
The more energy efficient a heating system is, the cheaper it is to run. Hot water heat pumps offer the cheapest available kW/h rate for hot water heating.

**Weather Compensation**
Weather compensation can detect changes in outdoor ambient conditions, allowing the hot water heat pump to adjust the water temperature. This ensures the right comfort temperature is produced without excess energy wastage.

**Convenient Comfort**
Hot water heat pumps supply hot water which delivers radiant heat energy to floor and potable water systems. Easy to use controls allow you to adjust temperature settings at the touch of a button.

**Multi Functional**
Hot water heat pumps can be installed for a range of applications, from swimming pool and spa pool heating, to sanitary hot water, under floor heating and fan coil cooling.

**Unobtrusive Heating**
There is no need to worry about furniture placement or wasting valuable floor space, as heat produced from a radiant floor slab warms evenly no matter how the room is arranged.

**Year Round Heating**
Hot water heat pumps provide energy efficient water heating year round, operating effectively in both high and low outdoor ambient temperatures.

**Safety**
Hot water heat pumps are the perfect option when you have children and pets. As there are no hot surfaces, they are an extremely safe heating option.
This advanced interface excels in multiple use applications. The PAC-IF031 water flow temperature controller allows Mitsubishi Electric PUHZ Series Hot Water Heat Pumps to heat sanitary hot water by intelligently switching between the heat pump and the electrical immersion element in the hot water cylinder. This ensures that the water in your hot water cylinder is kept at the ideal temperature of 55°C to kill bacteria such as Legionella.

Multiple sensors monitor hot water applications simultaneously to ensure maximum efficiency is achieved and that all applications are suitably addressed by the single heat pump. The interface will prioritise the hot water cylinder’s heating requirements, and can direct heating to the cylinder and stop secondary functions such as under floor heating.

The PAC-IF031 continuously measures the rate of temperature increase in the hot water cylinder. If required, the PAC-IF031 interface can utilise an electric immersion element to “top up” the hot water cylinder.

**CASE STUDY :: Nelson Home with Sanitary Hot Water and Underfloor Heating**

Just one energy efficient Mitsubishi Electric Hot Water Heat Pump system is needed to simultaneously heat 226m² of floor area and priority heat the 250 litre hot water cylinder via the PAC-IF031 interface in this family home. Floor coverings in the home include carpet, tiles and vinyl planking. The addition of 30mm polystyrene insulation under the concrete slab improves heating response time and reduce running costs.

“The system performs well beyond our expectations and the power bill is very acceptable”

- Maurice & Grace Win

**16kW Hot Water Heat Pump Solution:**

- PUHZ-RP140VHA Hot Water Heat Pump
- ACH70-50H Heat Exchanger
- PAC-IF031 Interface
- PAR-W21 Controller

**Other components:**

System Sensors (thermistors), Under Floor Heating System, Hot Water Cylinder with coil heat exchanger (solar ready type), Three way diverting valve and actuator, primary side pump, expansion vessel, fill valve, safety valve, IR Valve, and auto air vent.
16kW PUHZ Series Solution

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- PUHZ-RP140VHA Hot Water Heat Pump
- ACH70-50H Heat Exchanger
- PAC-IF031 Interface
- PAR-W21 Controller
- Other components: System Sensors (thermistors), Under Floor Heating System, Hot Water Cylinder with coil heat exchanger (solar ready type), Three way diverting valve and actuator, primary side pump, expansion vessel, fill valve, safety valve, IR Valve, and auto air vent.

PUHZ SERIES
5.0~16.0kW (55-60°C)
- Reliable, year-round water heating
- Inverter driven for maximum energy efficiency
- Water flow temperatures up to 60°C
- Operation in outdoor temperatures as low as -25°C
- Environmentally friendly R410a refrigerant
- Easy to use LCD Wall Controller with 7 Day Timer
- "Eco" heating mode for outdoor ambient temperature compensation
- Cooling mode available
- Compact design

PUHZ-HW140 Special Features:
- Heat interchange circuit for maximum system heat recovery
- Flash injection circuit and a third port on the compressor for superior low ambient heating performance

INSTALLATIONS

Spa Pools
Spa pools consume more power than many swimming pools, due to higher temperatures and potential heat losses. Installing a Hot Water Heat Pump to an existing spa pool can significantly reduce your heating costs. Power consumption can be reduced by 3 to 4 times.

Note: A range of Titanium coil / PVC shell heat exchangers are matched to the PUHZ hot water heat pump units. This removes any risk of corrosion-related damage due to salt or chlorine water treatment and simplifies pool water pipe work.

Swimming Pools
Many swimming pools are used in only the warmest summer months and remain unused for the rest of the year. Installing a Hot Water Heat Pump can enable you to enjoy your swimming pool year-round!

Note: A range of Titanium coil / PVC shell heat exchangers are matched to the PUHZ hot water heat pump units. This removes any risk of corrosion-related damage due to salt or chlorine water treatment and simplifies pool water pipe work.

Underfloor Heating
Underfloor Heating Systems are used in many homes to heat flooring areas. These systems use warm water circulated through pipes buried in the floor slab and deliver radiant energy to heat the rooms, providing the ultimate in comfort.

Connecting a Mitsubishi Electric Hot Water Heat Pump to an Underfloor Heating System is simple, as most existing Underfloor Systems include the necessary in-floor water pipes, distribution manifolds, pumps and controls. The water from the Hot Water Heat Pump is piped to the underfloor heating panel, and is circulated through the underfloor heating system. The heating temperature is controlled by either the underfloor system controller, which is supplied by the heating installer, or by the Mitsubishi Electric Hot Water Heat Pump wall-mounted controller which provides individual system set up requirements.

Sanitary Hot Water
On both new and existing installations, Mitsubishi Electric PUHZ Series Hot Water Heat Pumps combined with the PAC-IF031 Water Flow Temperature Controller allow heating of sanitary hot water by intelligently switching between the heat pump and the electrical immersion element in the hot water cylinder. This ensures that the water is kept at the ideal temperature of 55°C in the cylinder to kill bacteria such as Legionella.

Designed for Mitsubishi Electric hot water heat pumps we have a range of low and mains pressure hot water cylinders fitted with heat exchanger coils. Refer to p.14 for more information.

Existing installations may require an additional heat exchanger external to the cylinder, unless it's a coiled or 'solar ready' type.
Packaged System 5.0~14.0kW
PUHZ-(H)W Series Hot Water Heat Pump

PUHZ-(H)W Series :: Built-In Heat Exchanger

Mitsubishi Electric Hot Water Heat Pumps are designed to both heat or cool water. The PUHZ-(H)W Series has three packaged systems to choose from: PUHZ-W50 with 5kW of heating for smaller applications such as small underfloor heating system and hot water cylinders, PUHZ-W85 with 9kW of heating for medium-sized underfloor heating systems and hot water cylinders, and PUHZ-HW140 with 14kW of heating for larger underfloor installations and hot water cylinders.

The PUHZ-(H)W packaged system comes complete with an internal 316 stainless steel brazed plate heat exchanger. This allows for easy installation of connecting water pipes. The system is controlled by the PAR-W21 LCD wall 7 day timer/controller and an advanced PAC-IF031 interface for multiple use applications, such as sanitary hot water heating by intelligently switching between the heat pump and the electrical immersion element in the hot water cylinder.

Note: Ancillary equipment such as water pumps and expansion tanks are to be provided separately by the installer, and selected to meet the individual system pressure and flow requirements.

Specifications

<table>
<thead>
<tr>
<th>TYPE</th>
<th>Packaged Hot Water Heat Pump</th>
<th>Water Heating or Cooling</th>
</tr>
</thead>
<tbody>
<tr>
<td>MODEL</td>
<td>PUHZ-W50VHA</td>
<td>PUHZ-W85VHA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Return water temperature range</th>
<th>Heating</th>
<th>°C</th>
<th>+5 ~ +59 (+60 max.)</th>
<th>+5 ~ +59 (+60 max.)</th>
<th>+10 ~ +59 (+60 max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water pipe size</td>
<td>inch</td>
<td>1&quot; (BSP Parallel Thread)</td>
<td>1&quot; (BSP Parallel Thread)</td>
<td>1&quot; (BSP Parallel Thread)</td>
<td></td>
</tr>
<tr>
<td>Water flow rate range</td>
<td>l/min</td>
<td>6.5 ~ 14.3</td>
<td>10.0 ~ 25.8</td>
<td>17.9 ~ 40.1</td>
<td></td>
</tr>
</tbody>
</table>

Controller: PAR-W21 (PAC-IF031 Interface Unit)

Power supply: 1-Phase, 230V, 50Hz


Dimensions: 950 x 330 x 740 mm, 950 x 330 x 943 mm, 1020 x 330 x 1350 mm

Weight: 64 kg, 77 kg, 134 kg

Heating (A7/W35) *
- Capacity kW: (Min.1.5 ~ ) 5.0, (Min.2.7 ~ ) 9.0, 14.0
- COP: 4.10, 3.85, 4.19
- Power input kW: 1.22 *, 2.34 *, 3.34 *

Heating (A2/W35) *
- Capacity kW: (Min.1.5 ~ ) 5.0, (Min.2.6 ~ ) 8.5, 14.0
- COP: 3.13, 2.95, 3.18
- Power input kW: 1.60 *, 2.88 *, 4.40 *

Noise level (SPL): dBA 46 *, 48 *, 53 *

Nominal water flow rate: l/min 14.3, 25.8, 40.1

Running current (A7/W35): A 5.4, 10.3, 14.9

Pressure difference (Water circuit): kPa 12, 20, 9

Cooling (A35/W7) *
- Capacity kW: 4.5, 7.5, 12.5
- EER (COP): 2.94, 2.39, 2.59
- Power input kW: 1.53 *, 3.14 *, 4.82 *

Cooling (A35/W18) *
- Capacity kW: 4.5, 7.5, 12.5
- EER (COP): 4.13, 3.87, 4.01
- Power input kW: 1.09 *, 1.94 *, 3.12 *

Noise level (SPL): dBA 45 *, 48 *, 53 *

Nominal water flow rate: l/min 12.9, 21.5, 35.8

Running current (A35/W7): A 6.8, 13.7, 21.5

Pressure difference (Water circuit): kPa 10, 15, 7

Guaranteed operating range
- Heating °C: -15 ~ +35
- Cooling °C: -5 ~ +46

Pump input (Based on EN14511)
- Heating kW: 0.01, 0.03, 0.02
- Cooling kW: 0.01, 0.02, 0.02

* At distance of 1m from outdoor unit.
* Based on EN14511, power input figures include pump input figures at the bottom of the table.
* Cooling operation at -15˚C outdoor temperature is possible by using the optional air outlet guide.

Example of Packaged System

Water piping diagram.
Plate heat exchanger is integrated with outdoor unit.
Frost prevention is required.

<table>
<thead>
<tr>
<th>Outside air temperature (Dry-bulb)</th>
<th>+7°C</th>
<th>+2°C</th>
<th>+35°C</th>
<th>+35°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outside air temperature (Wet-bulb)</td>
<td>+38°C</td>
<td>+1°C</td>
<td>+24°C</td>
<td>+24°C</td>
</tr>
<tr>
<td>Water temperature (in/outlet)</td>
<td>+30 / 35°C</td>
<td>-10°C / +35°C</td>
<td>+12 / 7°C</td>
<td>+12 / 18°C</td>
</tr>
</tbody>
</table>

* Nominal operating condition

7
PUHZ-RP Series :: External Heat Exchanger

Mitsubishi Electric Hot Water Heat Pumps are designed to both heat or cool water. You can choose from: 11.2kW, 14.0kW or 16.0kW of heating - suitable for larger underfloor heating and swimming pools which also have an additional 8kW option.

The PUHZ-RP split system requires an external heat exchanger. The flexibility of this system allows the installer to position the heat exchanger right where the hot water is required for both new and retro-fit installations. Either an Alfa Laval ACH70-50H brazed plate 316 stainless steel type heat exchanger for underfloor and sanitary hot water heating or the Vaportec HXTi with high density plastics and a titanium coil heat exchanger for swimming and spa pool heating will require mounting and installation of refrigerant pipe work to the PUHZ-RP outdoor unit. The system is controlled by the PAR-W21 LCD wall 7 day timer/controller and an advanced PAC-IF031 interface for multiple use applications, such as sanitary hot water heating by intelligently switching between the heat pump and the electrical immersion element in the hot water cylinder.

Note: Ancillary equipment such as water pumps and expansion tanks are to be provided separately by the installer, and selected to meet the individual system pressure and flow requirements. This system is supplied with the Alfa Laval ACH70-50H or Vaportec HXTi Heat Exchanger.

Specifications

<table>
<thead>
<tr>
<th>MODEL</th>
<th>TYPE</th>
<th>Water Heating or Cooling</th>
</tr>
</thead>
<tbody>
<tr>
<td>PUHZ-RP71VKA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PUHZ-RP100VKA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PUHZ-RP125VKA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PUHZ-RP140VKA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Return water temperature range</td>
<td>Heating</td>
<td>°C</td>
</tr>
<tr>
<td></td>
<td>Cooling</td>
<td>°C</td>
</tr>
<tr>
<td>Controller</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power supply</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. current / Breaker size</td>
<td>A</td>
<td>19 / 25</td>
</tr>
<tr>
<td>Dimensions</td>
<td>WxDxH</td>
<td>mm</td>
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<tr>
<td>Weight</td>
<td>kg</td>
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</table>

**HEATING**

<table>
<thead>
<tr>
<th>MODEL</th>
<th>Type (A7/W35)</th>
<th>Capacity</th>
<th>kW</th>
<th>8.0</th>
<th>11.2</th>
<th>14.0</th>
<th>16.0</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>COP</td>
<td></td>
<td></td>
<td>4.21</td>
<td>4.21</td>
<td>4.15</td>
<td>3.90</td>
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<tr>
<td></td>
<td>Power input</td>
<td>kW</td>
<td></td>
<td>1.90</td>
<td>2.66</td>
<td>3.37</td>
<td>4.10</td>
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<tr>
<td></td>
<td>Noise level (SPL)</td>
<td>dB(A)</td>
<td>48</td>
<td>51</td>
<td>52</td>
<td>52</td>
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<tr>
<td></td>
<td>Nominal water flow rate</td>
<td>l/min</td>
<td>22.9</td>
<td>32.1</td>
<td>40.1</td>
<td>45.9</td>
<td></td>
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<tr>
<td></td>
<td>Running current</td>
<td>(A7/W35)</td>
<td>A</td>
<td>9.46</td>
<td>12.4</td>
<td>16.0</td>
<td>19.9</td>
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</table>

**COOLING**

<table>
<thead>
<tr>
<th>MODEL</th>
<th>Type (A35/W7)</th>
<th>Capacity</th>
<th>kW</th>
<th>6.6</th>
<th>9.1</th>
<th>12.0</th>
<th>12.5</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>EER (COP)</td>
<td></td>
<td></td>
<td>2.55</td>
<td>2.76</td>
<td>2.35</td>
<td>2.32</td>
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<tr>
<td></td>
<td>Power input</td>
<td>kW</td>
<td></td>
<td>5.59</td>
<td>3.37</td>
<td>5.10</td>
<td>5.38</td>
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<td></td>
<td>Noise level (SPL)</td>
<td>dB(A)</td>
<td>47</td>
<td>50</td>
<td>50</td>
<td>50</td>
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<tr>
<td></td>
<td>Nominal water flow rate</td>
<td>l/min</td>
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<td>26.1</td>
<td>34.4</td>
<td>35.8</td>
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<tr>
<td></td>
<td>Running current</td>
<td>(A35/W7)</td>
<td>A</td>
<td>9.05</td>
<td>12.5</td>
<td>15.5</td>
<td>19.7</td>
</tr>
</tbody>
</table>

Guaranteed operating range

- Heating: +6°C ~ +35°C
- Cooling: -5°C ~ +46°C

**UNDER-FLOOR EXCHANGER**

<table>
<thead>
<tr>
<th>MODEL</th>
<th>Alfa Laval</th>
<th>N/A</th>
<th>ACH70-50H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water pressure drop</td>
<td>@ 40°C</td>
<td>kPa</td>
<td>6</td>
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<tr>
<td>Water flow rate range</td>
<td>@ 40°C</td>
<td>l/min</td>
<td>31.8</td>
</tr>
<tr>
<td>Water pipe size</td>
<td>inch</td>
<td>1&quot; copper pipe pipe</td>
<td></td>
</tr>
<tr>
<td>Liquid / Gas pipe size</td>
<td>inch</td>
<td>3/8&quot; and 5/8&quot;</td>
<td></td>
</tr>
<tr>
<td>Dimensions</td>
<td>WxDxH</td>
<td>mm</td>
<td>112 x 125 x 526</td>
</tr>
<tr>
<td>Weight</td>
<td>kg</td>
<td>10.8</td>
<td></td>
</tr>
</tbody>
</table>

**SWIMMING/SPA POOL HEAT EXCHANGER**

<table>
<thead>
<tr>
<th>MODEL</th>
<th>Vaportec</th>
<th>HXTi 4</th>
<th>HXTi 6</th>
<th>HXTi 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water pipe size</td>
<td>mm</td>
<td>50mm PVC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liquid / Gas pipe size</td>
<td>inch</td>
<td>3/8&quot; and 5/8&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions</td>
<td>WxDxH</td>
<td>mm</td>
<td>165 x 235 x 640</td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>kg</td>
<td>3.4</td>
<td>3.9</td>
<td>3.9</td>
</tr>
</tbody>
</table>

* At distance of 1m from outdoor unit.
** Power input figures do NOT include pump input figures as pump input depends on local system configuration.
*** Cooling operation at -15°C outdoor temperature is possible by using the optional air outlet guide.

Note: Split type specifications are just examples of the case in which units are connected to a plate heat exchanger produced by Alfa Laval. Actual specifications depend on local system configuration. The specifications above are based on Alfa Laval ACH70-50H Heat Exchanger being used.
**CASE STUDY :: Online Control - Wellington to Nelson**

Although Nelson is the sun capital of New Zealand, this does not mean that it is forever summer! The Abel Tasman region is also a winter haven and as such, heating was a key consideration for a corporate Wellington family when building their holiday home at Kaiteriteri Beach near Nelson. City Multi VRF Air Conditioning Systems quietly and efficiently take care of not only the room heating and cooling, but also the hot water used for underfloor heating of polished concrete floors on both levels of this house.

The Mitsubishi Electric AG-150A Control System has a large colour LCD panel for controlling all the aspects of the home’s heating and ventilation systems, including the underfloor heating system. This web enabled controller has allowed the owners to maintain complete control of their remote residence through the control system’s online accessibility. The system’s remote controllability and high operating efficiency means pre-heating or even pre-cooling the home is both simple and cost effective.

**CASE STUDY :: Cromwell Medical Centre**

The design brief for this new medical centre was to provide a highly energy efficient building that would best suit the needs of a variety of medical professions all housed under one roof. The air conditioning and ventilation system needed to provide comfort with economy all year round which is no mean feat when outside ambient temperatures range from a winter low of -10°C to a summer high over 35°C.

City Multi R2 Systems were largely used throughout the building to provide the air conditioning, but the largest system also had a PWFY-BU water heating unit to provide heat recovery from the air conditioning load into the sanitary hot water system. Hot water usage is high due to the clinics many basins, so this is a good example of ‘time of use based energy savings’.

1x PWFY-P100VM-E-BU hot water module connected to a PURY-YHM-A heat recovery system heats the sanitary hot water.
Mitsubishi Electric Commercial Water Solutions require engineering input from your Mitsubishi Electric Specialist.

**Underfloor Heating**
Underfloor Heating Systems are used in many applications to heat either the entire space, or specific areas as required. These systems use warm water circulated through pipes buried in the floor slab and deliver radiant energy to heat controlled spaces, providing the ultimate in comfort for the occupants.

Connecting a Mitsubishi Electric Hot Water Heat Pump to an Underfloor Heating System is simple, as most existing Underfloor Systems include the necessary in-floor water pipes, distribution manifolds, pumps and controls. The water from the Hot Water Heat Pump is piped to the underfloor heating panel, and is circulated through the Underfloor Heating System. The space heating temperature is controlled by the underfloor system controller, which is supplied by the heating installer. The Mitsubishi Electric Hot Water Heat Pump wall-mounted controller allows the water flow temperatures to be set for the individual system modes and set up requirements, i.e. Heating / Heating Eco / Hot Water.

**Sanitary Hot Water**
The new Mitsubishi Electric PWFY-P~AU and PWFY-P~BU Water Heating Units allow water to be pre-heated, and even fully heated, by using the waste heat energy normally lost to the atmosphere from a commercial air conditioning system. It is also possible to provide the same heating from a stand-alone PWFY system to heat water up to 70°C. Depending on the system required and whether an existing system is used to recover energy, this offers energy savings from 300 – 550%.

**Swimming Pools**
Many swimming pools are used in only the warmest summer months and remain unused for the rest of the year. Installing a Hot Water Heat Pump can enable you to enjoy your swimming pool year-round!

**Hydroponics**
Most hydroponic growing systems require their water or nutrient solutions to be heated to a specific temperature dependant on the crop. The heated water is then pumped around the growing beds to provide both heat and nutrients to the plants. As the Heat Pump controller can be set to accurately control the water flow temperature, sensitive crops are easily cared for. With the ability to alter the temperature remotely, the Heat Pump can be interfaced with most greenhouse controllers and hydroponic growing systems. The advanced “Eco Mode” allows flow temperature compensation based on outside air temperature to ensure the highest possible energy efficiency.

**Aquaculture**
Aquaculture systems often require both heating and cooling depending on the species and time of year. For example, Paua cultivated on land and indoors will require some heat in winter, and often need cooling in summer time.

**Water Chilling**
Water chilling is available down to a flow temperature of 6°C, from a capacity of 4.5-14kW in the PUHZ range and from 20kW in the PWFY range. The systems require external pumps and, depending on application, a brine or antifreeze solution will be required to prevent freezing of the plate heat exchanger. Applications include small process and liquid data cooling, and chilled water for selected fan coil units.
VRF Water Heating Units are the latest technological breakthrough from the Mitsubishi Electric City Multi Range, with the ability to heat or cool water more efficiently than ever before. The PWFY-P~AU indoor modules can be installed in conjunction with standard City Multi VRF air conditioning indoor units, creating huge potential for heat recovery.

Available in two sizes: PWFY-P100VM-E-AU (12.5kW heating / 11.2kW cooling) and PWFY-P200VM-E-AU (25.0kW heating / 22.4kW cooling) which are modular to allow creation of larger solutions. Suitable applications for pre-heating sanitary water (through energy recovery), swimming pools, underfloor heating, low temperature hot water for fan coil units and convectors, hydroponics, aquaculture and water chilling.

The AU Series water heating and cooling unit utilise a 316 stainless steel plate heat exchanger with the ability to sense flow or return water temperature with a dip-switch setting. PWFY–P~AU units can be connected to either City Multi Y or R2 Series outdoor units (The smallest VRF hot water system is therefore 25kW of heating). Inputs: ON/OFF, Mode, Set Temp, Pump Interface. Outputs: ON/OFF, Error, Defrost.

CITY MULTI VRF Commercial Design

Mitsubishi Electric's CITY MULTI Series has the flexibility to adapt efficiently to any building requirement. A wide line up of indoor units and simple piping systems enable an easy fit to even the most complex configurations. And both R2 and Y-Series systems can be simply operated through a central controller. With it’s flexible system architecture, easy operation and energy saving technology CITY MULTI offers an ideal blend of comfort, efficiency and economy. Please contact the Mitsubishi Electric City Multi representative in your area for a unique design solution.
PWFY-P~BU Series :: Sanitary Water Heating of 10~70°C

VRF Water Heating Units are the latest technological breakthrough from the Mitsubishi Electric City Multi Range, with the ability to heat water more efficiently than ever before. The PWFY-P~BU indoor modules can be installed in conjunction with standard City Multi VRF air conditioning indoor units, creating huge potential for heat recovery.

Available in one size: PWFY-P100VM-E-BU (12.5kW heating) which is modular to allow creation of larger solutions. Sanitary water heating has suitable applications in: hotels and motels, apartments, commercial kitchens and laundries, office buildings, food processing industry, heat recovery from air conditioning systems into sanitary water storage, and direct sanitary water heating is also possible.

The BU Series water heating unit is perfect for sanitary hot water, with excellent heat recovery possibilities. It houses a second compressor running from air conditioning systems into sanitary water storage, and direct sanitary water heating is also possible. Heat recovery technology taps into and utilises otherwise wasted heat energy, extracted from areas of a building that require cooling, providing heating for hot water. Recovering the heat in this manner maximises the efficiency of the system all year round, therefore increasing energy savings and substantially lowering running costs. Inputs: ON/OFF, Set Temp, Pump Interface. Outputs: ON/OFF, Error, Defrost.

**Heat Recovery Technology**

PWFY-P~BU units benefit from the heat recovery operation of the City Multi R2 Series system, converting energy from the air conditioning to suitable temperatures for heating water, and allowing simultaneous heat recovery from the air conditioned space. This enables the highest possible COP performance.

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### Specifications

#### PWFY-P100VM-E-BU

- **Guaranteed outdoor operating range**: +10 ~ +45°C
- **Power input**: 0.6 ~ 2.15 A
- **Controller**: PAR-W21
- **Dimensions**: WxDxH = 450 x 300 x 800 (785 without legs)
- **Weight**: 39 kg

#### PWFY-P100VM-E1-AU

- **Guaranteed outdoor operating range**: +10 ~ +45°C
- **Power input**: 0.6 ~ 2.15 A
- **Controller**: PAR-W21
- **Dimensions**: WxDxH = 450 x 300 x 800 (785 without legs)
- **Weight**: 39 kg

#### PWFY-P200VM-E-BU

- **Guaranteed outdoor operating range**: +10 ~ +70°C
- **Power input**: 11.12 A
- **Controller**: PAR-W21
- **Dimensions**: WxDxH = 450 x 300 x 800 (785 without legs)
- **Weight**: 64 kg

#### PWFY-P200VM-E1-AU

- **Guaranteed outdoor operating range**: +10 ~ +70°C
- **Power input**: 11.12 A
- **Controller**: PAR-W21
- **Dimensions**: WxDxH = 450 x 300 x 800 (785 without legs)
- **Weight**: 64 kg

---

### Connectable Outdoor Units

#### TYPE

<table>
<thead>
<tr>
<th>R2 Series, Simultaneous Heating &amp; Cooling</th>
<th>Y Series, Heating or Cooling</th>
</tr>
</thead>
<tbody>
<tr>
<td>PURY-(E)P-Y(S)JM-A(-BS)</td>
<td>PURY-(E)P-Y(S)JM-A(-BS)</td>
</tr>
</tbody>
</table>

#### Connectable outdoor units

- **Pipe length**: 7.5 m
- **Level difference**: 0m
- **Pu / Pe**: 7.5°C / 6°C

---

### Controllers

#### Type

<table>
<thead>
<tr>
<th>Model</th>
<th>Cooling Capacity kW</th>
<th>Power Input kW</th>
<th>Running Current A</th>
</tr>
</thead>
<tbody>
<tr>
<td>PURY-P200YJM-A</td>
<td>12.5</td>
<td>2.48</td>
<td>11.12</td>
</tr>
</tbody>
</table>

---

### Connectable Outdoor Units

#### TYPE

- **Heating or Cooling**
- **Guaranteed indoor operating range**: +70°C / +70°C
- **Guaranteed outdoor operating range**: +20°C / -4°C
- **Power input**: 3-Phase, 380-400-415V, 50Hz
- **Available Capacity Range in Series kW**: 25.0 / 12.5
- **Available COP Range in Series**: 4.30 / 4.30

---

### Controllers

#### Type

<table>
<thead>
<tr>
<th>Model</th>
<th>Heating Capacity kW</th>
<th>Cooling Capacity kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>PURY-P200YJM-A</td>
<td>25.0 / 12.5</td>
<td>22.4 / 15.89</td>
</tr>
</tbody>
</table>

---

### Connectable Outdoor Units

#### TYPE

<table>
<thead>
<tr>
<th>Connectable indoor units</th>
<th>Guaranteed outdoor operating range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guaranteed capacity kW</td>
<td>25.0 / 12.5</td>
</tr>
</tbody>
</table>
| Available COP Range in Series kW | 3.60 / 4.30

---

### Controllers

#### Type

<table>
<thead>
<tr>
<th>Model</th>
<th>Heating Capacity kW</th>
<th>Cooling Capacity kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>PURY-P200YJM-A</td>
<td>25.0 / 12.5</td>
<td>22.4 / 15.89</td>
</tr>
</tbody>
</table>
The Zubadan CAHV packaged hot water heat pump is designed to provide hot water up to 70°C with an ambient outdoor temperature as low as -10°C and a minimal drop-off down to -20°C, making it an ideal replacement for a boiler system or, better still, an uncompromising method of heating sanitary hot water for commercial applications. This unit utilizes the unique flash injection technology seen in the City Multi Zubadan air conditioning range.

Built In Heat Exchanger Hot Water Heat Pump CAHV-P500YA-HPB: Comes complete with an internal 316 stainless steel brazed plate heat exchanger. This allows for easy installation of connecting water pipes to where the hot water is required.

### Specifications

<table>
<thead>
<tr>
<th>Specifications</th>
<th>CAHV-P500YA-HPB (-BS)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HEATING</strong></td>
<td></td>
</tr>
<tr>
<td>Heating outlet temperature</td>
<td>Heating °C</td>
</tr>
<tr>
<td>Heating inlet temperature</td>
<td>Heating °C</td>
</tr>
<tr>
<td>Diameter of water pipe</td>
<td>1 1/2” diameter</td>
</tr>
<tr>
<td>Diameter of water pipe</td>
<td>1 1/2” diameter</td>
</tr>
<tr>
<td>Water flow rate range</td>
<td>m³/h</td>
</tr>
<tr>
<td>Water pressure drop (A7/W45) *</td>
<td>kPa</td>
</tr>
<tr>
<td>Power supply</td>
<td>3-phase 4-wire 380-400-415V 50/60Hz</td>
</tr>
<tr>
<td>Max. current</td>
<td>A</td>
</tr>
<tr>
<td>Dimensions</td>
<td>WxDxH</td>
</tr>
<tr>
<td>Weight</td>
<td>kg</td>
</tr>
<tr>
<td>Refrigerant</td>
<td>R407C x 5.59k (x 2)</td>
</tr>
</tbody>
</table>

* Flash-injection Circuit, which is designed for our ZUBADAN CITY MULTI (air conditioning system for cold regions), is mounted in our new Hot Water Heat Pump. By utilizing our advanced “Flash-injection Circuit” and the latest high-efficiency compressor, Hot Water Heat Pump provides hot water up to 70°C, and produces less capacity drop at low outdoor temperature.

During defrost operation, two compressors, which are equipped within one unit, run alternatively and result in smaller drop in outlet water temperature.
Hot Water Heat Pump Sizing

Use this guide to estimate your heating requirements, however units should not be purchased without advice from your heating or pool specialist.

Every application is as individual as its owner. An incorrect selection may lead to unnecessary power consumption or a system with insufficient heating capability.

Underfloor Heating

The amount of heat required will vary depending on location and the construction of your home. Therefore, every house requires a different calculation to heat the desired area. The maps to the right are designed as a guide. First, calculate the floor area of the house requiring heating to be installed. Remember to deduct areas under cupboards, garages etc. Take the area (m²) and multiply it by the factor in your region on the appropriate map. Your underfloor heating specialist will be able to give you a more accurate assessment of your heating requirements.

Spa Pools

We have a new Titanium Coil/PVC Shell heat exchanger to effectively heat where aggressive chemical treatment is present. This is matched to one of our PUHZ-RP Hot Water Heat Pump units. Alternatively use our PUHZ-W50 with an intermediate water to water heat exchanger.

Swimming Pools

Hot Water Heat Pumps enable outdoor swimming pools to be heated to a comfortable temperature to extend their use year round. Indoor pools also benefit from heating because they don’t receive the same solar gain as outdoor pools in the summer, and can be heated during winter to provide year round swimming. The heat pump size required depends on environmental aspects of the pool, including location and construction, temperature of the pool, and the air temperature. The most important factor is the pool water surface area as this is where heat is lost through evaporation. Installing a pool cover is the best way to retain this heat.

Due to the large number of variables, a simple calculation of heat pump capacity is not always possible. We recommend you check our website or contact a competent installer to have your pool heating requirement carefully assessed.

Hot Water Cylinders

New Zealand made hot water cylinders manufactured to the highest standards, complete with heat exchanger coil designed specifically for Mitsubishi Electric hot water heat pumps. Cylinders come supplied with all water connections on the front and include standard 3kW electric element and thermostat. Sensor pockets are correctly positioned for the HWHP cylinder temperature sensor.

<table>
<thead>
<tr>
<th>MODEL</th>
<th>Capacity</th>
<th>Dimensions (ØxH) mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDTH300C20</td>
<td>300 L</td>
<td>560 x 1920</td>
</tr>
<tr>
<td>BDTH350C20</td>
<td>350 L</td>
<td>560 x 2200</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MODEL</th>
<th>Capacity</th>
<th>Dimensions (WxDxH) mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDTMG180C20</td>
<td>180 L</td>
<td>560 x 1240</td>
</tr>
<tr>
<td>BDTMG225C20</td>
<td>225 L</td>
<td>560 x 1520</td>
</tr>
<tr>
<td>BDTMG270C20</td>
<td>270 L</td>
<td>560 x 1800</td>
</tr>
<tr>
<td>BDTMG300C20</td>
<td>300 L</td>
<td>560 x 1980</td>
</tr>
</tbody>
</table>

Warranty

Mitsubishi Electric Hot Water Heat Pumps come with a 1 year parts, labour and compressor warranty. Alfa Laval and Vaportec Heat Exchangers come with a 1 year parts warranty. Warranty does not cover areas with hard water unless a water softener is fitted. Warranty does not cover heat exchangers used in pool applications where the water pH and chlorine levels fall outside those advised in the technical information. Warranty conditions apply. Please be aware of these conditions prior to purchasing.
Black Diamond Technologies
Exclusive distributor of Mitsubishi Electric products in NZ

Be sure to ask for Mitsubishi Electric. Other brands share the 3-diamond logo, however they are separate to the Mitsubishi Electric brand and cannot supply the models, features or guarantees outlined in this brochure. | All models, features and specifications are subject to change and amendment at anytime. Dec 2017