COMMERCIAL HEAT PUMP

Heat water using free energy from the air using our Air to Water models, or, heat water using waste heat from a chiller using our Water to Water models.

We needed to replace 24 individual water heaters on our hotel roof, these were being boosted by a backup gas boiler. Since switching to Rheem Commercial Heat Pumps, we have seen our energy bill reduced drastically and have not had to use our gas boiler since.

Mark, DoubleTree by Hilton Hotel, Cairns

CASE STUDY

AUSTRALIAN UNITY

PARRAMATTA, NSW

A modern office building comprising 14 levels of office space in Parramatta needed an End of Trip Facility.

Hot Water Requirements

With the consultant's project requirements calling for a high-efficiency hot water plant capable of accommodating 10 showers and a 2000 litre load requirement over a two-hour peak, Rheem Commercial sized and proposed a ducted commercial air to water heat pump. Configured to vent cool discharge air into the car park entrance via a sheet metal duct, the system's flexibility was also a major advantage when it came to accommodating the limited space available for the hot water plant.

Solution

In order to provide hot water boost in situations where higher than expected peak loads or low overnight temperatures preclude heat pump hot water recovery, a 15kW heating element was installed in the top third of the 2000 litre Rheem Stainless Steel storage tank.

RHEEM COMMERICAL HEAT PUMP

As the largest supplier of commercial water heaters in Australasia, Rheem Commercial is now introducing two groups of heat pumps with two different technologies by collecting free heat energy from air and waste heat from the building chilling circuit.

Rheem can now boast an expanded, true commercial grade, high thermal efficiency, WaterMark certified heat pump range – in both air to water and water to water technologies.

These high efficiency models offer:

- Reduced running costs and reduced CO2 emissions for building owners
- High quality components for durability
- Suitability to most of New Zealand's climate
- Rheem iQ control provides on-board diagnostics, system configuration and optional BMS connectivity
- Two model sizes in each range that broaden your redundancy and shrink your plant footprint

Manufactured by Rheem in Australia, the Commercial Heat Pump range in New Zealand is supported by a nationwide service centre network along with New Zealand technical support.

WaterMark
AS 3498
Lic WMK 21549
SAI Global

Certified System
Quality
ISO 9001

Warranty: 2 years on heat pump sealed system, 1 year on parts & labour

AIR TO WATER HEAT PUMP

FOR WHERE ENERGY EFFICIENCY IS ESSENTIAL

HEAT PUMP | HOT WATER TO 65°C | SAVE UP TO 75% ENERGY | FLEXIBLE USES CAR PARK AIR

65°C hot water in a super-efficient, super-compact package.

Highly efficient

Up to 25% of the operating cost of an electric water heater. Delivers hot water up to 65°C, with a system Coefficient of Performance (COP) of up to 4.01. This makes it substantially cheaper to run than electric, natural gas or ULPG. Highly efficient option for fuel redundancy. Heat pumps can also be used as a preheat to other boost fuel types.

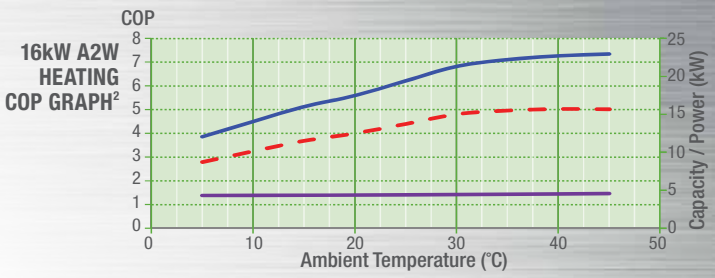
Green points

Adds to the green points from end-of-trip facilities. The heat pump is designed to draw its air from and discharge within basement car parks without flueing, unlike gas systems.

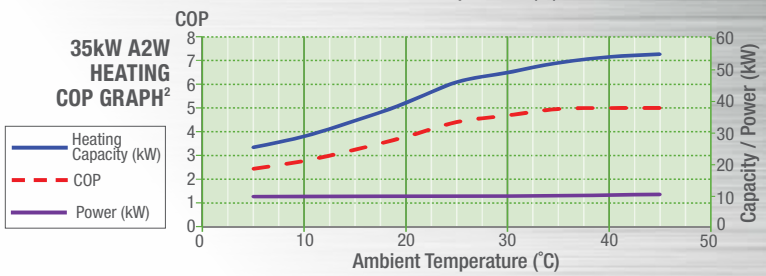
Multiple installation options

Designed for both vertical or horizontal discharge options, with a discharge fan option available in both ducted and non-ducted versions. Horizontal discharge models can also be stacked two high to reduce plant footprint (suffix 'S').

16kW A2W HEATING COP GRAPH[2]



35kW A2W HEATING COP GRAPH[2]

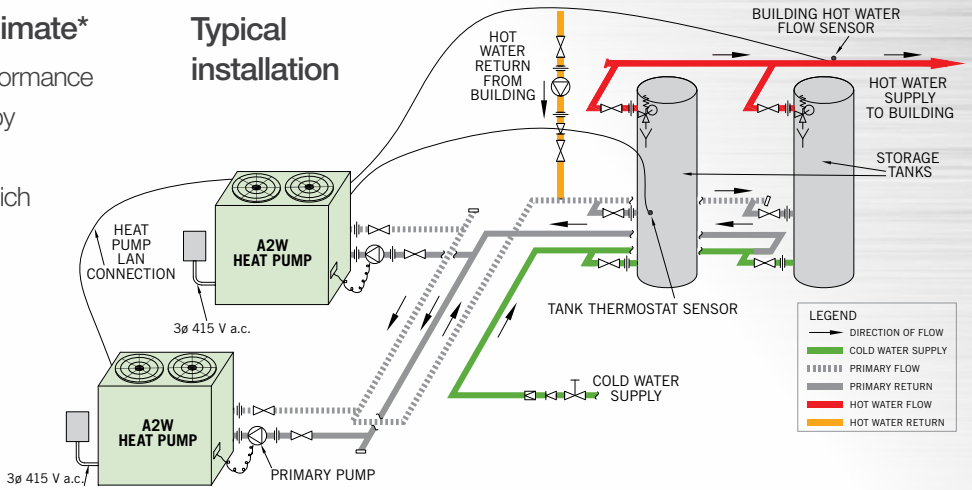


Suits most of New Zealand's climate*

Automatic defrost allows continued performance in low ambient temperature conditions by diverting a portion of the hot refrigerant to the evaporator coil to melt any ice which may form. In addition, the evaporator is dipped to provide extra protection in corrosive atmospheres, and the unit has been tested in ambient conditions as high as 40°C.

*Enquire at Rheem New Zealand Ltd for very cold climates

Typical installation

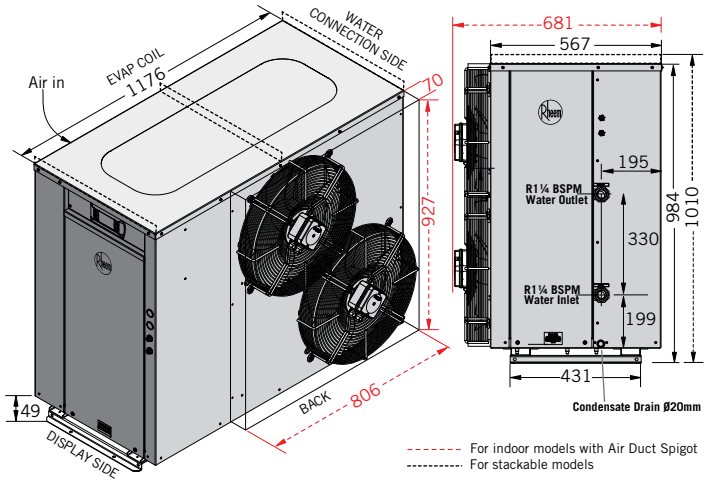


TECHNICAL DATA

AIR TO WATER 16kW MODEL

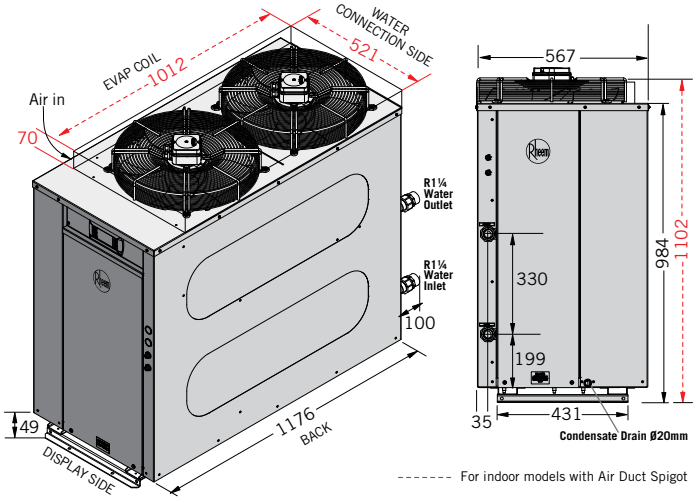
16kW AIR TO WATER – ALL HORIZONTAL DISCHARGE MODELS

953016H0 – Non Ducted
952016H0 – Ducted
953016HS – Non Ducted stackable
952016HS – Ducted stackable



16kW AIR TO WATER – ALL VERTICAL DISCHARGE MODELS

95301600 – Non Ducted
95201600 – Ducted



RECOVERY								
Ambient Temperature °C	5	10	15	20	25	30	35	40
Output (kW)	12	14.5	16.4	17.46	19.5	21.7	22.5	23
Recovery – Litres per hour								
20°C rise	516	624	705	751	839	933	968	989
25°C rise	413	499	564	601	671	746	774	791
30°C rise	344	416	470	501	559	622	645	659
35°C rise	295	356	403	429	479	533	553	565
40°C rise	258	312	353	375	419	467	484	495
45°C rise	229	277	313	334	373	415	430	440
50°C rise	206	249	282	300	335	373	387	396
55°C rise	188	227	256	273	305	339	352	360

PRODUCT DATA		Ducted Exhaust	Non Ducted Exhaust
Heating Capacity*	kW	17.46	17.46
Power Input*	kW	4.01	4.01
COP*		4.0	4.0
Recovery @ 50°C Rise*	L/hr	300	
Operating Range (ambient)	°C	5-45	
Outlet Temperature	°C	65	
Refrigerant		R134a	
TPR Valve Setting (VE/SS)	kPa	1000/850	
ECV Setting (VE/SS)**	kPa	850 /700	
Maximum Water Pressure Supply			
Without ECV (VE/SS)**	kPa	800/680	
With ECV (VE/SS)**	kPa	650/550	
Electrical Connection		3Phase/415V/50Hz	
Max Current per Phase (running, incl pump)	Amps	17.06	15.22
Minimum Circuit Size (per phase)	Amps	20	
Air Flow (at maximum static pressure)	L/s	1600	
Maximum Static Pressure	Pa	80	20
Minimum Ventilation per inlet and outlet	m^2	1	
Minimum room volume for indoor installation^	m^3	7.5	
Sound Pressure Level	dBA	59@3m	
Approx Weight Empty	kg	120	
Approx Weight Full	kg	125	
Storage per Heat Pump	L	400-4,000	
Clearances			
Evaporator Coil Side	mm	500	
Back (vertical discharge models)	mm	Nil	
Back (horizontal discharge models)	mm	1200	
Display Side	mm	850	
Water Connections Side	mm	500	
Top (vertical discharge models)	mm	1200	
Top (horizontal discharge option)	mm	Clearance above unit required for service personnel to stand	

HEAT PUMP SIZING CHART				
Number of Heat Pumps in Parallel	1	2	3	4
Primary Pump	Grundfos CM 3-2			
Branch Size ID	40			
Header Size ID	40	50	65	80

Note: Header pipe sizing is based on a total length of 40m of primary flow and return piping and 20 bends, excluding equa-flow manifolds on storage tanks and heat pumps @ 1.2m/sec velocity. One pump per Heat Pump.

ACCESSORIES			
Storage Tank	Pump	BMS Card	LAN Cable
410L (VE) A610 430	CM 3-2	17520 BACnet TCP/IP	17495
1000L to 5000L (SS)		17521 BACnet MS/TP	
RT Series		17522 Modbus RS485	

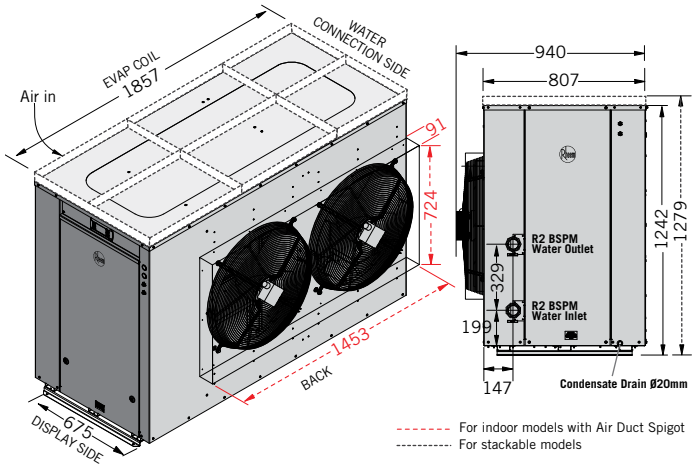
* 20°C ambient/60%RH. 39°C water in / 45°C water out.
**ECV not supplied with water heater
^ To comply with AS1677.2, the minimum room size permissible is 7.5m^3 for 16kW and 17.73m^3 for 35kW per heat pump for indoor installation. A larger room size is recommended for efficient heat pump operation.

TECHNICAL DATA

AIR TO WATER 35kW MODEL

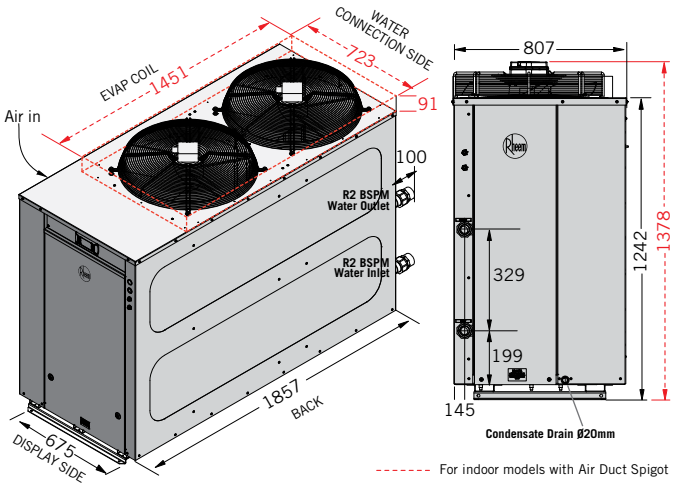
35kW AIR TO WATER – ALL HORIZONTAL DISCHARGE MODELS

953035H0 – Non Ducted 953035HS – Non Ducted stackable
952035H0 – Ducted 952035HS – Ducted stackable



35kW AIR TO WATER – ALL VERTICAL DISCHARGE MODELS

95303500 – Non Ducted 95203500 – Ducted



PRODUCT DATA		Ducted Exhaust	Non Ducted Exhaust
Heating Capacity*	kW	39.55	39.55
Power Input*	kW	10.25	10.25
COP*		3.9	3.9
Recovery @ 50°C Rise*	L/hr	680	
Operating Range (ambient)	°C	5-45	
Outlet Temperature	°C	65	
Refrigerant		R134a	
TPR Valve Setting (VE/SS)	kPa	1000/850	
ECV Valve Setting (VE/SS)**	kPa	850/700	
Maximum Water Pressure Supply			
Without ECV (VE/SS)**	kPa	800/680	
With ECV (VE/SS)**	kPa	650/550	
Electrical Connection		380 - 415 Volts / 3 Phase / 50 Hz	
Max Current per Phase (running, incl pump)	Amps	34.9	32.34
Minimum Circuit Size (per phase)	Amps	40	
Air Flow (at maximum static pressure)	L/s	5830	5270
Maximum Static Pressure	Pa	100	20
Minimum Ventilation per inlet and outlet	m^2	1.93	
Minimum room volume for indoor installation^	m^3	17.73	
Sound Pressure Level	dBA	69@3m	
Approx Weight Empty	kg	300	
Approx Weight Full	kg	310	
Storage per Heat Pump	L	400-8,000	
Clearances			
Evaporator Coil Side	mm	1000	
Back (vertical discharge models)	mm	Nil	
Back (horizontal discharge models)	mm	2000	
Display Side	mm	850	
Water Connections Side	mm	600	
Top (vertical discharge models)	mm	2000	
Top (horizontal discharge option)	mm	Clearance above unit required for service personnel to stand	

RECOVERY								
Ambient Temperature °C	5	10	15	20	25	30	35	40
Output (kW)	25.5	29	34.6	39.55	46.6	49.9	53	54.1
Recovery – Litres per hour								
20°C rise	1097	1247	1488	1701	2004	2146	2279	2326
25°C rise	877	998	1190	1361	1603	1717	1823	1861
30°C rise	731	831	992	1134	1336	1430	1519	1551
35°C rise	627	713	850	972	1145	1226	1302	1329
40°C rise	548	624	744	850	1002	1073	1140	1163
45°C rise	487	554	661	756	891	954	1013	1034
50°C rise	439	499	595	680	802	858	912	931
55°C rise	399	453	541	618	729	780	829	846

PUMP & PIPE SIZING CHART				
Number of Heat Pumps in Parallel	1	2	3	4
Primary Pump	Grundfos CM 10-1			
Branch Size ID	50			
Header Size ID	50	80	100	100

Note: Header pipe sizing is based on a total length of 40m of primary flow and return piping and 20 bends, excluding equa-flow manifolds on storage tanks and heat pumps @ 2.2m/sec velocity. One pump per Heat Pump.

ACCESSORIES			
Storage Tank	Pump	BMS Card	LAN Cable
410L (VE) A610 430	CM 10-1	17520- BACnet TCP/IP	17495
1000L to 5000L (SS)		17521- BACnet MS/TP	
RT Series		17522- Modbus RS485	

* 20°C ambient/60%RH. 39°C water in / 45°C water out.
**ECV not supplied with water heater
^ To comply with AS1677.2, the minimum room size permissible is 7.5m^3 for 16kW and 17.73m^3 for 35kW per heat pump for indoor installation. A larger room size is recommended for efficient heat pump operation.

WATER TO WATER HEAT PUMP

FOR WHERE ENERGY EFFICIENCY IS ESSENTIAL

HEAT PUMP | REDUCED CHILLING LOAD | W CERTIFIED | COMPACT | UP TO 7.0 COP EFFICIENCY*

The Rheem Water to Water (W2W) range includes units using R134a for hot water heating up to 65°C, with a minimum entering water temperature on the building chiller loop of 12°C, giving a return water temperature of 7°C, with the units being compact and suitable for indoor or outdoor installation.

Efficiency

The ability of these units to provide a dual efficiency sees combined COPs of up to 7.05. The efficiency in hot water production is up to 4.05 and this leads to substantial savings in energy use and heating cost. The savings are magnified where the cooling by-product lessens a building's chilling load. COP in cooling are up to 3.05.

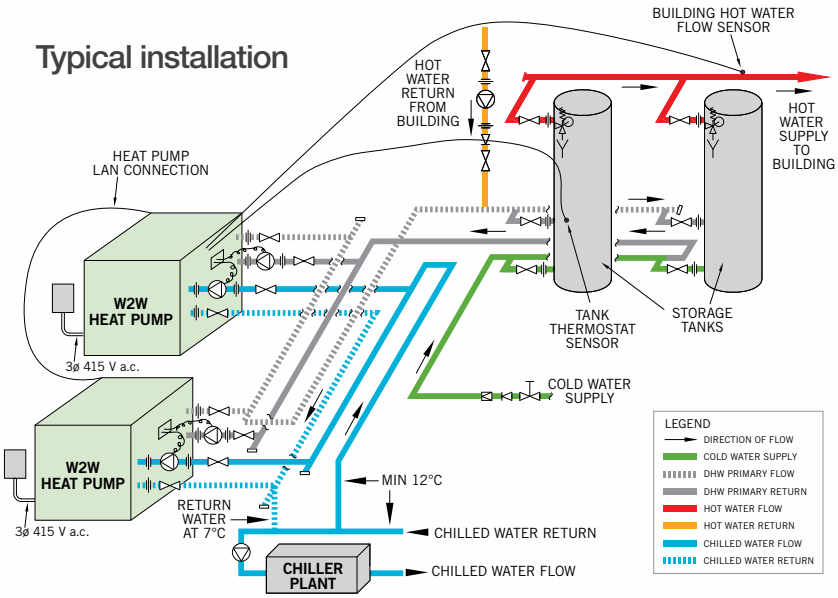
Return on investment

High COP of this product results in a very favourable return on investment making the W2W HP both a sound environmental and financial investment compared to gas and electric heating systems.

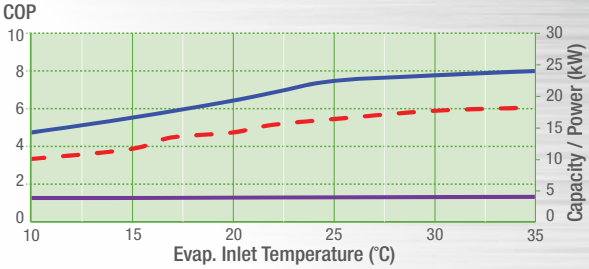
More key features

- Water Mark certified 316L stainless steel, double-wall brazed plate heat exchanger on domestic hot water side
- Multiple safeties including low temperature freeze protection and flow switch on the chilled water side
- Full commercial construction with marine grade aluminium case

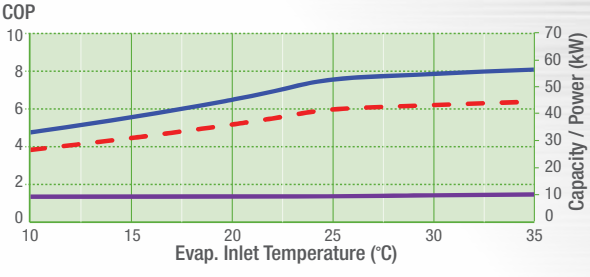
Typical installation



15kW W2W HEATING COP GRAPH



35kW W2W HEATING COP GRAPH

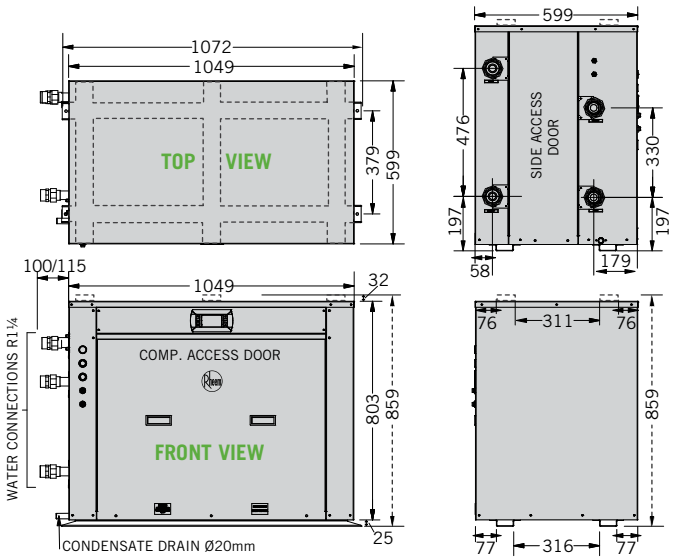


TECHNICAL DATA

WATER TO WATER 15kW & 35kW MODEL

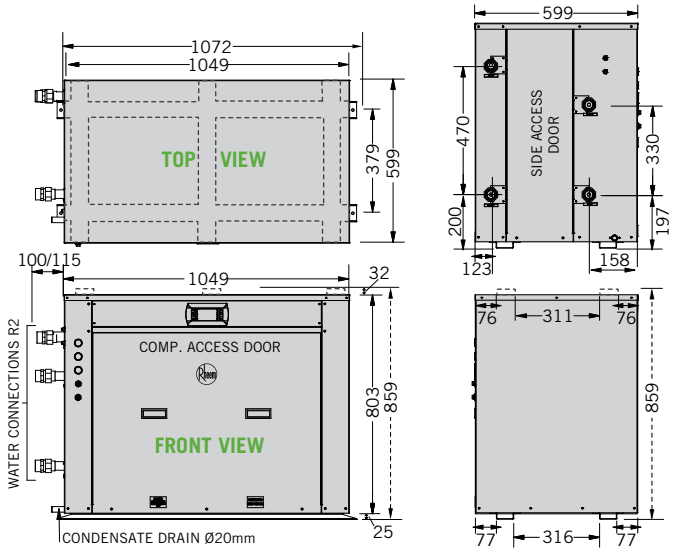
15kW MODEL

95401500 - non-stackable 9540150S - stackable



35kW MODEL

95403500 - non-stackable 9540350S - stackable



MODEL	15kW	35kW
Nominal Heating Capacity^	15kW	34.75kW
Nominal Cooling Capacity^	11.3kW	25.9kW
Power Input kW^	3.7kW	8.8kW
Coefficient of Performance (Heating)^	4	4
Coefficient of Performance (Cooling)^	3	3
Maximum DHW Temperature	65 °C	
Refrigerant	R134a	
Hot Water Side		
TPR Valve Setting (VE/SS)	1000/850 kPa	
ECV Setting (VE/SS)*	850/700 kPa	
Maximum Water Supply Pressure – Without ECV (VE/SS)* – With ECV (VE/SS)*	 800/680 kPa 680/550 kPa	
Hot Water Side Flow Rate	1.1L/s	2.2L/s
Heat Exchanger Heating Design	316L Stainless steel – Double wall brazed plate	
Design Heating Temperature Difference	6°K	
Design Pressure Drop	40kPa	
Cold Water Side		
Maximum Water Supply Pressure	2450kPa	
Cold Water Side Flow Rate	1.1L/s	1.85L/s
Heat Exchanger Cooling Design	316L Stainless steel – Single wall brazed plate	
Design Cooling Temperature Difference	5 °K	
Design Pressure Drop	40kPa	
Minimum room volume for indoor installation	5.6m³	15.34m³
Electrical Connection	3 Phase / 415V / 50Hz	
Max Current per Phase (running, incl pumps)	13.96	29.94
Minimum Circuit Size (per phase)	20A	40
Sound Pressure Level	59dBa @ 3m	
Approx Weight Empty	100kg	120kg
Approx Weight Full	105kg	125kg
Storage per Heat Pump	400L to 4000L	400L to 8000L
Clearances		
Front	850mm	
Back	Nil mm	
Water Connections Side	850 mm	
RHS Side	Nil mm	
Top (clearance above unit required for service personnel to stand)	0 mm	

* ECV not supplied with water heater

^ Rating Conditions: Heating 39°C Water in, 45°C water out, 51°C SCT, Cooling 12°C water in, 7°C water outlet, 2°C SST.

ACCESSORIES			
Storage Tank	Pump	BMS Card	LAN Cable
410L (VE) A610 430	2 x CM 3-2 (16kW) 2 x CM 10-1 (35kW)	17520- BACnet TCP/IP	17495
1000L to 5000L (SS)		17521- BACnet MS/TP	
RT Series		17522- Modbus RS485	

PUMP & PIPE SIZING CHART									
	15kW				35kW				
No. of Heat Pumps in Parallel	HOT SIDE				HOT SIDE				
	1	2	3	4	1	2	3	4	
Pump	Grundfos CM 3-2				Grundfos CM10-1				
Branch Size (mm)	40				50				
Header Size (mm)	40	50	65	80	50	80	100	100	
No. of Heat Pumps in Parallel	COLD SIDE				COLD SIDE				
	1	2	3	4	1	2	3	4	
Pump	Grundfos CM 3-2				Grundfos CM10-1				
Branch Size (mm)	40				50				
Header Size (mm)	40	50	65	80	50	80	100	100	

RECOVERY						
Model	95401500			95403500		
Evaporator Inlet Temperature °C	12	20	35	12	20	35
Output (kW)	15	19	24	34.75	45.9	55.9
Recovery - Litres per hour						
20°C rise	645	817	1032	1494	1974	2404
25°C rise	516	654	826	1195	1579	1923
30°C rise	430	545	688	996	1316	1602
35°C rise	369	467	590	854	1128	1374
40°C rise	323	409	516	747	987	1202
45°C rise	287	363	459	664	877	1068
50°C rise	258	327	413	598	789	961
55°C rise	235	297	375	543	718	874