



# AW290

50kW

Commercial reversible air source heat pump  
Heating & cooling



 R290

OUTPUT (kW)

50 - 800

# AW290

The AW290 is a high-performance, high temperature air source heat pump designed to meet heating, cooling, and domestic hot water demands in commercial applications, including apartment buildings, hotels, and schools. The AW290 utilises natural R290 refrigerant for exceptional energy efficiency and a reduced environmental impact.

Up to 16 units can be arranged in cascade to provide capacity up to 800kW, making them ideal for commercial installations.

Featuring the latest inverter technology, the AW290 ensures optimal system efficiency by automatically adjusting output to match heating demand. This guarantees stable operation even in colder conditions, maximising performance while minimising energy consumption.



5

5 Year Compressor Warranty\*

2

2 Year Parts Warranty\*

## EVI powered

The AW290 units are equipped with EVI technology, enabling high energy efficiency and stable performance. With inverter and EVI technology, the series reaches A+++ (35/55°C) energy efficiency and COP is up to 4.4.

## R290 refrigerant

The units use R290 refrigerant, a natural and environmentally friendly alternative with a low global warming potential. R290 has been widely adopted in modern heat pump technology due to its excellent thermodynamic properties, delivering high efficiency and reliable performance in air-to-water heat pump applications.

## R290 leak sensor

The integrated R290 leak sensor ensures safe operation with high sensitivity and a rapid 5-second response time. Designed for long-term reliability, it requires no calibration or maintenance and has an impressive 15-year lifespan, providing continuous protection and peace of mind.

## Refrigerant/water separator

The AW290 heat pump includes an automatic refrigerant/water separator, ensuring safe operation by preventing any gas from escaping into indoor spaces. This built-in safety feature helps maintain system efficiency and protects occupants from potential exposure.

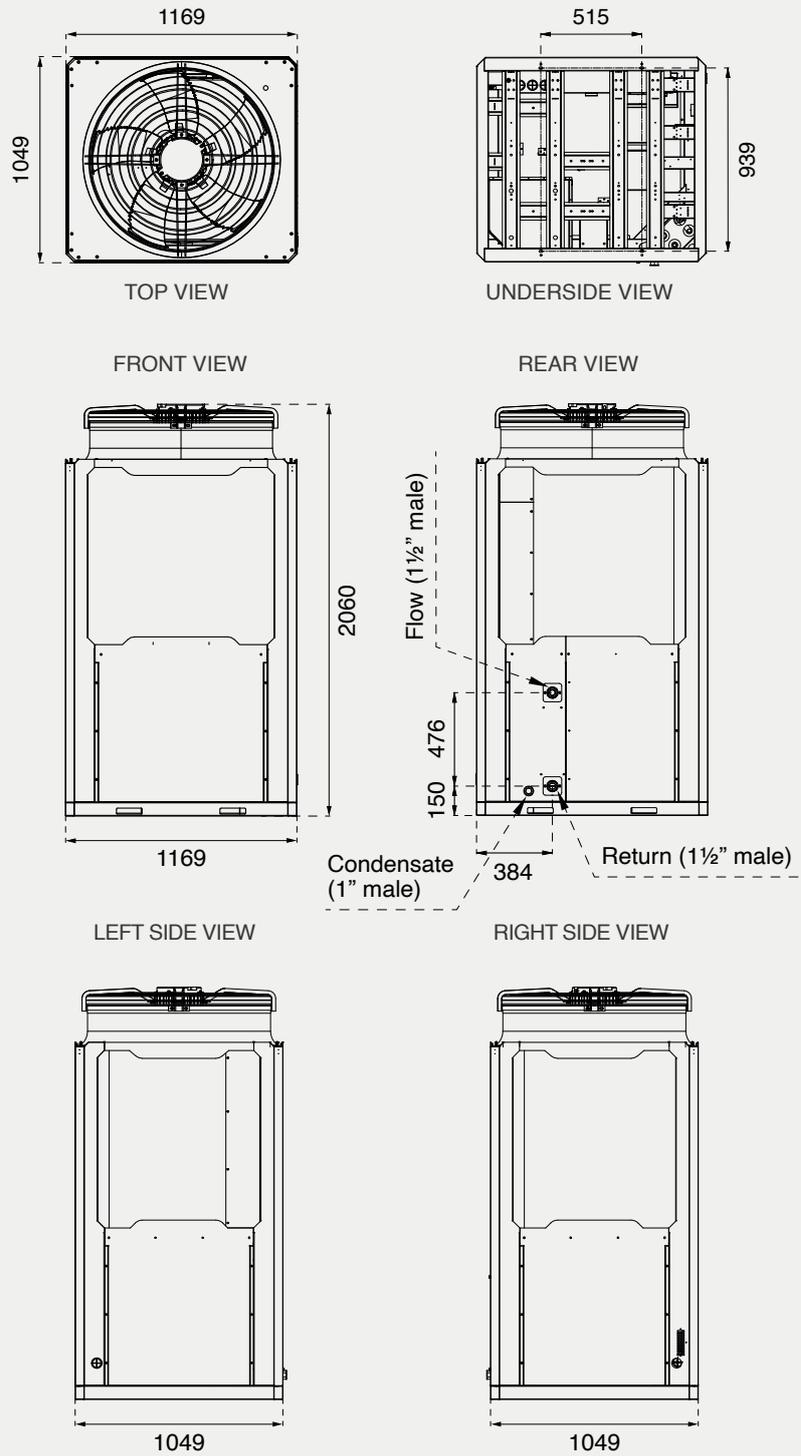
- Monobloc design for easy installation
- Electronic expansion valve control for precise superheat regulation
- Modbus/BACnet communication
- Self-adjusting EEV control
- Inbuilt Grundfos pump

Energy efficiency	A+++ (35/55°C)
COP (A7/W35)	4.40
SCOP (LWT35)	4.62
Heating output	50kW
Max. flow temperature	85°C
Working range (min/max)	-35 / 43°C
Power supply	415V
Sound power level	72 dB(A)

# Dimensions

50kW

Dimensions: mm



## Clearances (mm)

50kW

Clearances (mm)	50kW
Front	1000
Rear	1000
Left	1000
Right	1000
Top	3000

# Performance data

50kW

<b>Power supply</b>	V / Ph / H		380-415 / 3 / 50
<b>IP rating</b>			IPX4
<b>Performance</b>			
<b>Heating capacity at 35°C<sup>1</sup></b>	<b>Capacity</b>	kW	50.0
	<b>Rated input</b>	kW	11.36
	<b>COP</b>		4.40
<b>Heating capacity at 45°C<sup>2</sup></b>	<b>Capacity</b>	kW	50.0
	<b>Rated input</b>	kW	13.44
	<b>COP</b>		3.72
<b>Heating capacity at 55°C<sup>3</sup></b>	<b>Capacity</b>	kW	50.0
	<b>Rated input</b>	kW	15.53
	<b>COP</b>		3.22
<b>Cooling capacity<sup>4</sup></b>	<b>Capacity</b>	kW	45.0
	<b>Rated input</b>	kW	10.23
	<b>EER</b>		4.40
<b>Cooling capacity<sup>5</sup></b>	<b>Capacity</b>	kW	42.0
	<b>Rated input</b>	kW	14.0
	<b>EER</b>		3.00
<b>Energy efficiency class</b>			A+++
<b>SCOP</b> (Seasonal Coefficient of Performance)	<b>LWT at 35°C / 55°C</b>		4.62 / 3.96
<b>SEER</b> (Seasonal Energy Efficiency Ratio)	<b>LWT at 7°C / 18°C</b>		4.8 / 6.8
<b>Operating temperature</b> (min/max)	<b>Cooling</b>	°C	-5 / 43
	<b>Heating</b>	°C	-35 / 35
	<b>DHW</b>	°C	-35 / 43
<b>MOP</b> (Maximum Overcurrent Protection)	A		65
<b>MCA</b> (Maximum Circuit Amps)	A		55
<b>GWP</b> (Global Warming Potential)			3
<b>Equivalent CO<sub>2</sub></b>	Ton		0.015
<b>Sound power level</b> (A7/W35) / (A7/W55)	<b>Partial load</b>	dB(A)	72 / 72
	<b>Full load</b>	dB(A)	83 / 85
<b>Sound pressure level @ 1 metre</b> (A7/W35) / (A7/W55)	<b>Partial load</b>	dB(A)	55 / 55
	<b>Full load</b>	dB(A)	66 / 68
<b>Components</b>			
<b>Fan</b>	<b>Motor type</b>	Brushless DC motor	
	<b>Number of fans</b>	1	
	<b>Speed</b>	rpm	700
<b>Refrigerant</b>	<b>Type</b>	R290	
	<b>Charge</b>	kg	5
	<b>System pressure (min/max)</b>	MPa	0.3 / 3.5
<b>Compressor</b>	<b>Type</b>	EVI Scroll DC Compressor	
	<b>Quantity</b>	1	
<b>Throttle type</b>	Electronic expansion valve		
<b>Water side heat exchanger</b>	Plate heat exchanger		
<b>Hydraulic</b>			
<b>Water pressure drop</b>	kPa	29	
<b>Rated water flow</b>	m <sup>3</sup> /h	8.60	
<b>Flow/return connections</b>	1½" M		
<b>Dimensions</b>			
<b>Dimensions (LxDxH)</b>	<b>Net</b>	mm	1169 × 1049 × 2060
	<b>Packaging</b>	mm	1271 × 1151 × 2260
<b>Weight</b>	<b>Net</b>	kg	445
	<b>Gross</b>	kg	475

# Operating conditions

External temperature °C	Flow temperature °C	Heat output kW	COP	Input power kW	Input current A
-20	35	42.1	1.63	25.8	41.9
	45	41.4	1.56	27.2	43.6
	55	40.5	1.51	26.8	42.9
	65	40.1	1.47	27.3	43.7
-15	35	50.3	1.68	29.9	46.4
	45	48.7	1.68	29.0	45.1
	55	47.7	1.60	29.8	46.5
	65	44.8	1.56	28.7	44.4
-10	75	44.6	1.41	31.7	48.9
	35	50.1	2.02	24.6	37.8
	45	50.1	1.90	26.3	40.5
	55	49.8	1.73	28.8	44.2
-7	65	49.7	1.59	31.1	48.1
	80	46.0	1.50	30.6	47.1
	35	50.4	2.18	23.1	36.1
	45	49.5	2.04	24.3	37.3
-5	55	47.9	1.95	24.5	37.3
	65	46.8	1.80	26.0	40.1
	80	40.2	1.72	23.4	36.1
	35	50.0	2.40	20.8	32.0
-2	45	49.3	2.18	22.6	34.9
	55	50.4	1.99	25.3	39.1
	65	48.3	1.86	26.0	40.4
	80	41.1	1.80	22.8	35.1
0	35	50.0	2.80	17.9	27.4
	45	49.7	2.52	19.8	30.6
	55	50.0	2.27	22.0	33.8
	65	49.1	2.10	23.4	36.3
7	80	50.6	1.74	29.1	44.7
	35	50.0	3.06	16.3	25.6
	45	49.5	2.67	18.5	29.0
	55	50.0	2.42	20.7	31.9
	65	50.6	2.09	24.3	37.6
	80	50.4	1.80	28.0	43.2
	35	50.1	4.44	11.3	18.2
	45	50.1	3.72	13.5	21.0
	55	50.3	3.18	15.8	24.5
	65	50.7	2.68	18.9	29.3
	80	49.9	2.19	22.8	34.9

## Performance envelope

**85°C**

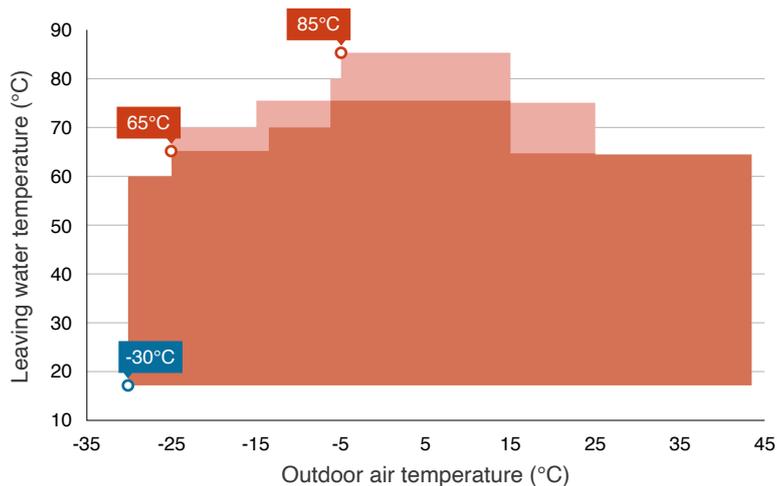
Ultra-high leaving water temperature

**-30°C**

Extremely low working (air) temperature

High temperature

Normal temperature

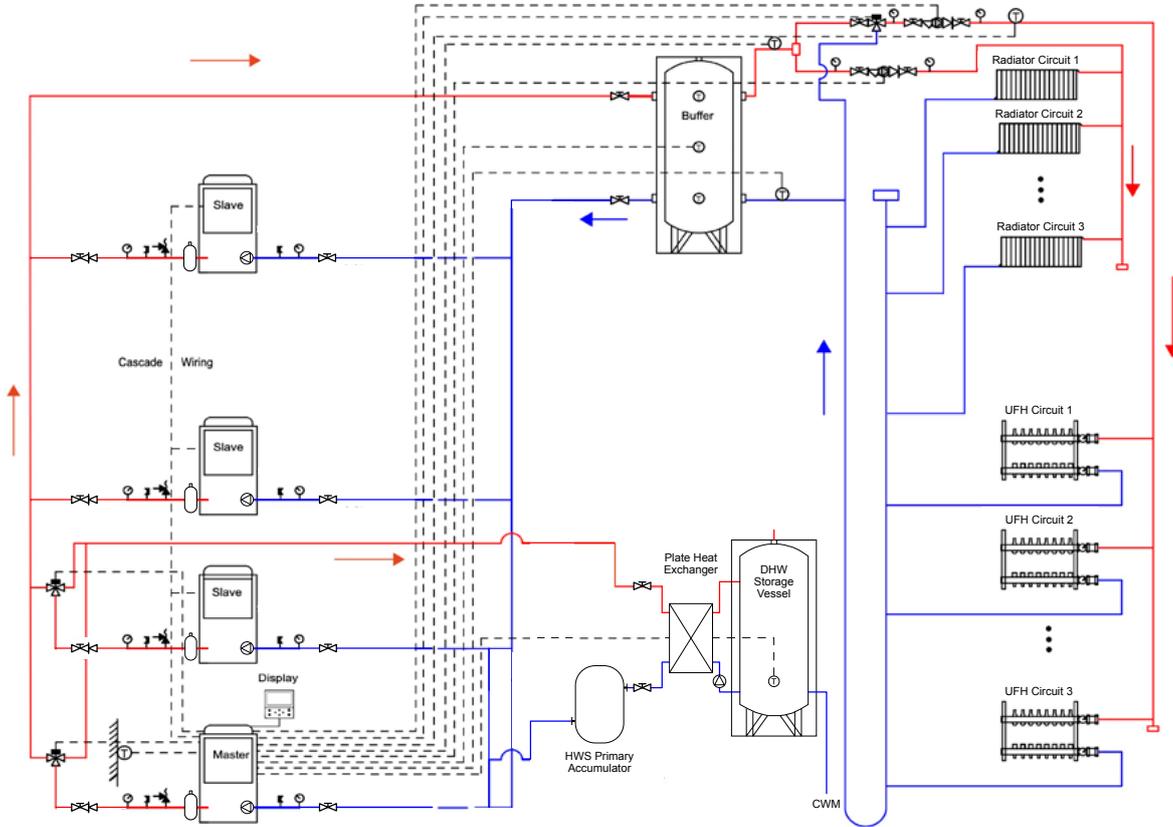


# Schematics

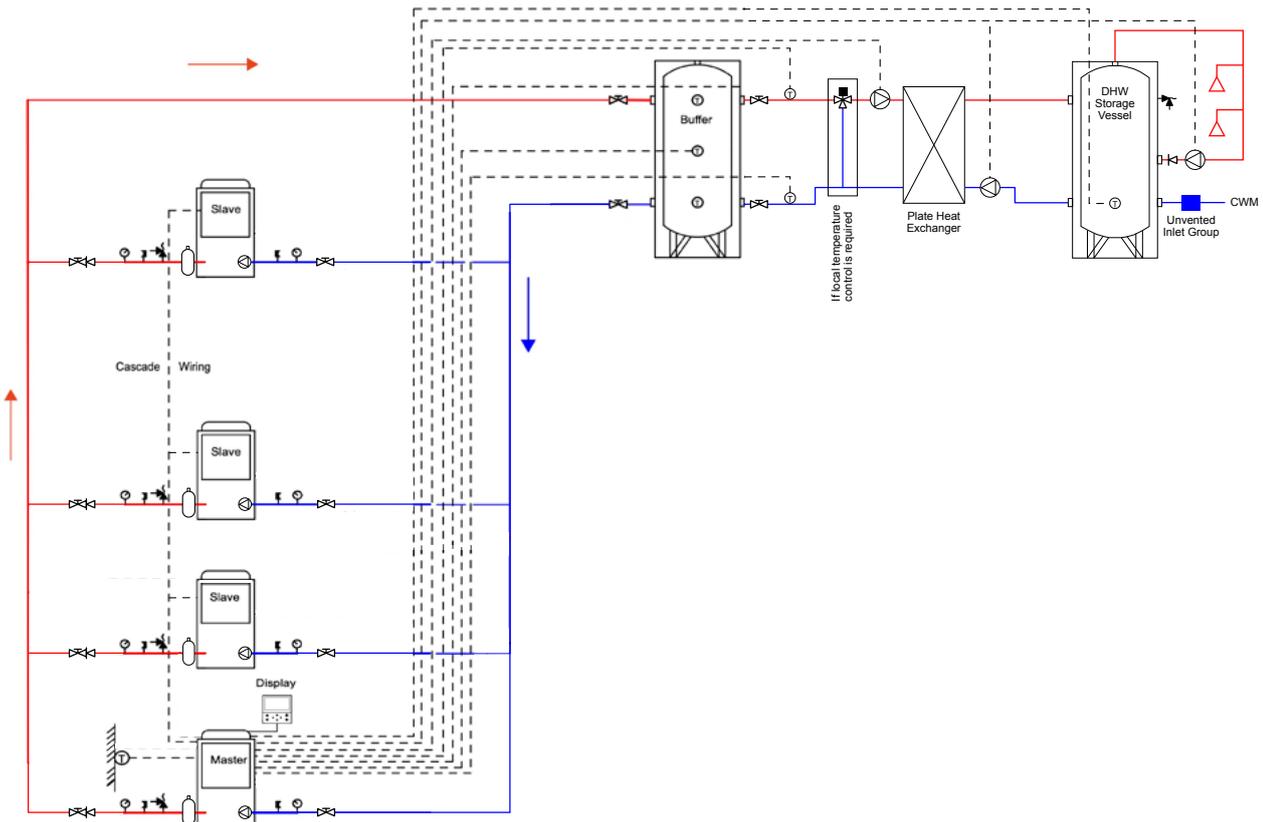
Simplified diagram for illustration only - safety devices may have been omitted for clarity.  
For additional schematics, refer to the installation guide.

Symbol	Description	Symbol	Description
	Isolating valve		Strainer
	Check valve		Temp sensor
	Circulation pump		3-way valve
	Pressure gauge		Degasser
			Safety valve

## Heating & DHW with Plate Heat Exchanger



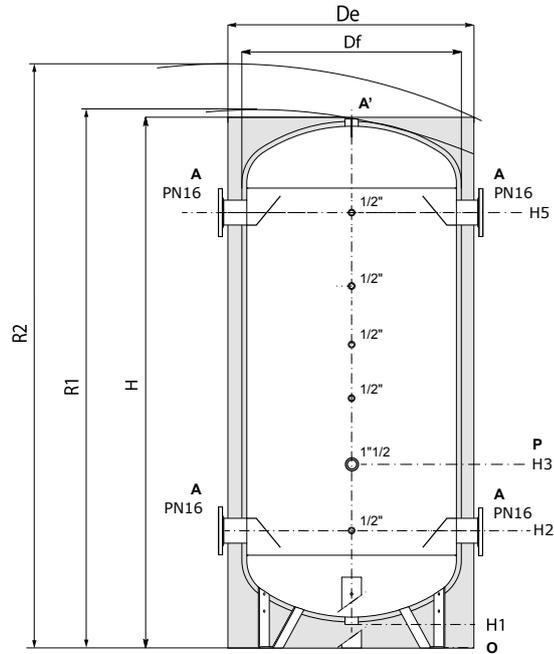
## DHW only



# Heat pump buffer vessels

- Mild steel construction
- 6 bar working pressure
- 5x 1/2" sensor points
- 1 1/2" connection for immersion heater

- A Flanged connection  
 O Drain  
 P Connection for immersion heater

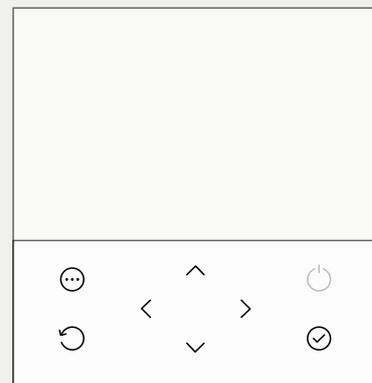


Model	Volume litres	Weight kg	Df	De	H	R1	R2	H1	H2	H3	H4	H5	O	A'	A
mm															
500	478	77	690	910	1805	1940	2030	130	405	705	1205	1455	1 1/4"	1 1/4"	DN80 PN16
800	758	105	750	1010	2113	2240	2330	120	415	815	1415	1715	1 1/4"	1 1/4"	DN80 PN16
1000	987	141	890	1110	2115	2300	2400	105	425	825	1425	1725	1 1/2"	1 1/2"	DN100 PN16
1500	1435	200	950	1250	2492	2650	2760	130	500	930	1710	2010	2"	2"	DN150 PN16
2000	1973	233	1140	1400	2490	2750	2870	105	510	940	1720	2020	2"	2"	DN150 PN16
2500	2294	397	1250	1390	2324	2650	2700	143	682	969	1519	1756	1"	2"	DN150 PN16
3000	2988	432	1440	1540	2378	2790	2840	127	711	998	1448	1785	1'	2"	DN150 PN16
4000	3914	494	1640	1740	2386	2900	2960	105	719	996	1426	1763	1	2"	DN150 PN16
5000	4970	714	1640	1740	2950	3380	3430	105	719	1166	1991	2293	1'	2"	DN150 PN16

## Controller

The AW290 comes with an advanced controller designed for seamless integration and optimal system performance. Offering precise control and monitoring, it enhances efficiency, flexibility, and ease of use across various applications.

- Cascade control for up to 16 heat pumps
- 0-10V control for seamless system integration
- Three-zone control with diverter valve management
- Modbus/BACnet compatibility for BMS integration
- Weather compensation for enhanced efficiency
- Quiet mode for reduced noise operation
- Real-time energy data: capacity, consumption, and COP
- Weekly scheduling for customised operation
- Frost protection to prevent system damage
- SG ready for smart grid compatibility
- Power-off memory to retain settings after shutdown



**Modutherm Limited**  
**Unit 4 Genesis**  
**Endeavour Drive**  
**Basildon, SS14 3WF**

**modutherm.co.uk**  
Tel: 0345 521 5666  
modutherm@modularhg.co.uk

Your local contact is:

