

> HMW

WATER - WATER AND BRINE - WATER HEAT PUMPS FOR INDOOR INSTALLATION

Available range

Unit type

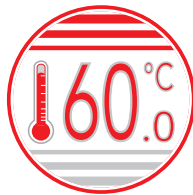
- IH Heat pump
- IP Reversible heat pump
(reversible on the refrigerant side)

Versions (heat recovery)

- VB Base version
- VD Desuperheater version

Acoustic setting up

- AB Base setting up
- AS Low noise setting up



Unit description

This series of **water-water** heat pumps satisfies the heating, cooling and domestic hot water production requirements of residential plants of small and medium size.

All the units are suitable for indoor installation and can be applied to **fan coil** plants, **radiant** floor plants and high efficiency **radiators** plants.

As source both water (from well, river, lake...) or brine solutions (from geothermic probes) can be used.

The control system allows to manage not only the refrigerant circuit but the whole plant with the possibility to choose different solutions both for the heating and cooling plant and for the domestic hot water management. The possibility of solar panels or other heating sources integration is also available.

The **heating** function optimizes the flow water temperature according both to the ambient temperature and to the outdoor temperature through climatic curves adaptable to the building features. It's possible to manage a storage tank and two independent circuits (a direct one and a mixed one).

The **domestic hot water** management allows to control the three way valve, the storage tank and the anti-legionella cycles (if necessary).

The **cooling** function can be realized through "passive cooling" (free cooling), through "active cooling" (refrigerant circuit inversion) or through both systems actuated in sequence. When the unit is used in radiant floor plants, to avoid condensate generation, a room humidity sensor can be installed. During cooling mode operation a part of the heating power in excess

can be recovered for the domestic hot water production (VD version).

The **internal programmer clock** allows to define different daily switching programs for heating, cooling and domestic hot water production.

The refrigerant circuit is equipped with scroll compressor mounted on damper supports, brazed plate heat exchangers, electronic expansion valve and reverse cycle valve (for reversible units). The circuit is protected by high and low pressure switches and flow switches on both the exchangers.

In the low noise setting up units (AS) the outdoor structure is **thermally and acoustically insulated** in order to reduce sound propagation and to allow the installation in domestic places.

The heat exchangers and all the hydraulic pipes are thermally insulated to avoid condensate generation and reduce thermal losses.

All the units are supplied with phase sequence and voltage controller and with an outdoor temperature sensor in order to realize the climatic control.

All the units are accurately built and individually tested in the factory. Only electric and hydraulic connections are required for installation.

Options

Plant side flow rate management

- not present
- standard pump
- high head pump
- modulating pump

Source side flow rate management

- not present
- standard pump
- high head pump
- modulating pump
- 2 way valve

Domestic hot water production

- not present
- 3 way valve

Passive cooling

- not present
- standard

Soft starter

- not present
- standard

Accessories

Rubber vibration dampers

Remote thermostat (wired or wireless)

Remote control (wired or wireless)

Wireless transmitter

Wireless repeater

Condensate sensor

Room hygrosat

Room humidity sensor

CONTROL SYSTEM

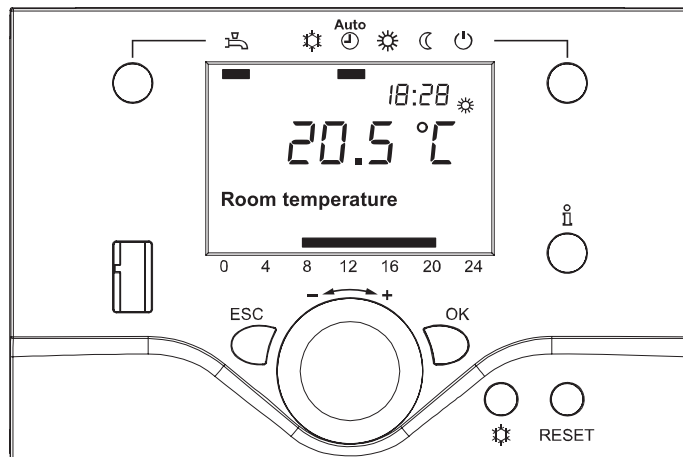
The microprocessor controller is able to manage not only the unit itself but also all that components of the plant which allow to realize a complete system.

The main **functions** of the control system are :

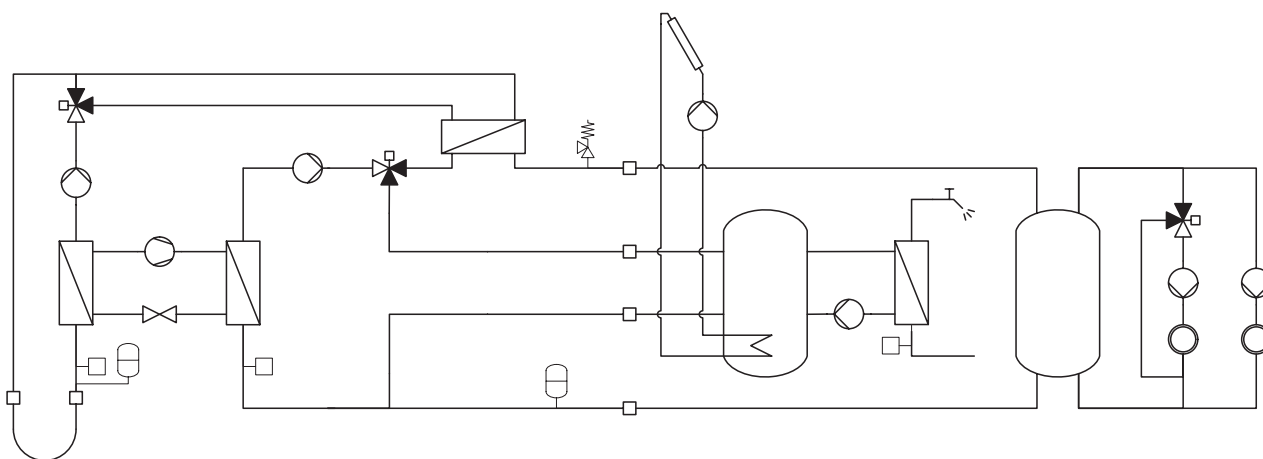
- room temperature control according to the outdoor temperature (climatic control)
- domestic hot water production (management of 3 way valve, storage tank, anti legionella cycles...)
- management of a heating and/or cooling mixed circuit (pump and 3 way mixing valve)
- management of a heating direct circuit (only pump)
- management of a storage tank for heating and/or cooling
- management of electrical heaters for heating and domestic hot water (3 steps logic)
- solar panels integration
- passive cooling
- room humidity control for cooling with radiant systems
- internal programmer clock (for heating, cooling and domestic hot water)
- digital input for electrical energy low tariff
- alarm memory management and diagnostic
- compressor and pump operating hour counter
- possibility to manage more units in cascade (maximum 16)

Besides the standard user interface to be placed indoor, wired or wireless remote thermostats are available which allow to control all the operating parameters of the unit and to acquire the temperature in the different zones in order to realize a more precise and comfortable control.

The unit controller is able to manage a lot of different plant solutions enabling automatically the necessary control algorithms according to the components which have been connected.



The management of such components is possible through additional expansion modules which communicate with the unit by means of an internal bus and provide all the inputs and outputs required to fulfil a complete system.



The controller is able to manage up to **two zones in heating** (one by means of a mixed circuit and the other by means of a direct circuit) and **one zone in cooling** (by means of a mixed circuit).

It's possible to realize more complex plants connecting to the heat pump controller further expansion modules in order to extend without limits the number of zones to be managed.

For each zone the following parameters can be set :

- set point
- daily or weekly operating time table
- climatic control curve
- room control sensor : it can be in common with the other zones or independent (in that case it's necessary to install an additional room thermostat)

OPERATING LIMITS	Unit type	Cooling		Heating		°C
		min	max	min	max	
Plant flow temperature	-	6	30	15	60	°C
Source return temperature (water)	-	5	45	5	25	°C
Source return temperature (brine)	-	-10	45	-10	25	°C

NOMINAL performances - Radiant plants

IP	Acoustic setting up : AB and AS	30.1	35.1	40.1	45.1	50.1	55.1	
W10W35	Heating capacity	28,2	32,4	38,2	42,7	48,1	56,4	kW
	Power input	5,13	5,93	7,01	7,90	8,86	10,5	kW
	COP	5,50	5,46	5,45	5,41	5,43	5,37	-
	Water flow rate plant side	4866	5594	6598	7360	8295	9715	l/h
	Pressure drops plant side	20	26	24	29	28	38	kPa
	Water flow rate source side	6655	7670	9031	10089	11378	13368	l/h
	Pressure drops source side	36	47	43	53	51	70	kPa
B0W35	Heating capacity	21,6	24,9	29,4	32,9	37,0	43,4	kW
	Power input	5,02	5,76	6,84	7,64	8,57	10,1	kW
	COP	4,30	4,32	4,30	4,31	4,32	4,30	-
	Water flow rate plant side	3741	4295	5074	5680	6390	7481	l/h
	Pressure drops plant side	12	16	14	18	17	23	kPa
	Water flow rate source side	5326	6134	7231	8122	9140	10744	l/h
	Pressure drops source side	25	32	30	37	36	48	kPa
W30W18	Cooling capacity	30,5	34,9	41,2	46,0	51,8	60,6	kW
	Power input	5,18	5,97	7,07	7,95	8,90	10,6	kW
	EER	5,89	5,85	5,83	5,79	5,82	5,72	-
	Water flow rate plant side	5276	6052	7138	7983	8983	10518	l/h
	Pressure drops plant side	23	30	28	34	33	44	kPa
	Water flow rate source side	6146	7040	8314	9284	10444	12204	l/h
	Pressure drops source side	30	39	37	45	43	58	kPa
B30W18	Cooling capacity	30,1	34,5	40,8	45,6	51,3	60,1	kW
	Power input	5,22	6,04	7,15	8,06	9,02	10,7	kW
	EER	5,77	5,71	5,71	5,66	5,69	5,62	-
	Water flow rate plant side	5207	5983	7069	7897	8897	10431	l/h
	Pressure drops plant side	22	29	27	33	32	43	kPa
	Water flow rate source side	6598	7569	8953	9987	11247	13157	l/h
	Pressure drops source side	36	47	44	54	52	70	kPa

NOMINAL performances - Radiant plants

IH	Acoustic setting up : AB and AS	30.1	35.1	40.1	45.1	50.1	55.1	
W10W35	Heating capacity	28,8	33,0	39,0	43,6	49,1	57,6	kW
	Power input	5,20	6,02	7,11	8,02	8,99	10,7	kW
	COP	5,54	5,48	5,49	5,44	5,46	5,38	-
	Water flow rate plant side	4970	5698	6719	7516	8468	9906	l/h
	Pressure drops plant side	20	26	24	30	29	39	kPa
	Water flow rate source side	6813	7825	9211	10326	11641	13657	l/h
	Pressure drops source side	37	48	45	56	54	73	kPa
B0W35	Heating capacity	22,1	25,4	30,0	33,6	37,8	44,2	kW
	Power input	5,09	5,84	6,92	7,74	8,68	10,2	kW
	COP	4,34	4,35	4,34	4,34	4,35	4,33	-
	Water flow rate plant side	3827	4381	5178	5801	6529	7620	l/h
	Pressure drops plant side	12	16	15	19	18	24	kPa
	Water flow rate source side	5469	6274	7400	8323	9369	10970	l/h
	Pressure drops source side	26	34	31	39	37	50	kPa

Data declared according to **EN 14511**. The values are referred to units without options or accessories. Brine = water with 30% ethylene glycol.

W10W65 = source: water in 10°C out 7°C / plant: water in 55°C out 65°C
 W10W55 = source: water in 10°C out 7°C / plant: water in 47°C out 55°C
 W10W45 = source: water in 10°C out 7°C / plant: water in 40°C out 45°C
 W10W35 = source: water in 10°C out 7°C / plant: water in 30°C out 35°C
 W30W7 = source: water in 30°C out 35°C / plant: water in 12°C out 7°C
 W30W18 = source: water in 30°C out 35°C / plant: water in 23°C out 18°C

B0W65 = source: brine in 0°C out -3°C / plant: water in 55°C out 65°C
 B0W55 = source: brine in 0°C out -3°C / plant: water in 47°C out 55°C
 B0W45 = source: brine in 0°C out -3°C / plant: water in 40°C out 45°C
 B0W35 = source: brine in 0°C out -3°C / plant: water in 30°C out 35°C
 B30W7 = source: brine in 30°C out 35°C / plant: water in 12°C out 7°C
 B30W18 = source: brine in 30°C out 35°C / plant: water in 23°C out 18°C

NOMINAL performances - Standard plants

IP	Acoustic setting up : AB and AS	30.1	35.1	40.1	45.1	50.1	55.1	
W10W45	Heating capacity	26,0	29,8	35,1	39,3	44,3	51,9	kW
	Power input	6,14	7,05	8,35	9,34	10,50	12,3	kW
	COP	4,23	4,23	4,20	4,21	4,22	4,22	-
	Water flow rate plant side	4501	5162	6083	6795	7664	8968	l/h
	Pressure drops plant side	17	22	20	25	24	32	kPa
	Water flow rate source side	5709	6567	7716	8642	9757	11464	l/h
	Pressure drops source side	27	35	32	40	38	52	kPa
B0W45	Heating capacity	20,1	23,2	27,3	30,6	34,4	40,3	kW
	Power input	5,97	6,82	8,10	9,01	10,1	11,8	kW
	COP	3,37	3,40	3,37	3,40	3,41	3,42	-
	Water flow rate plant side	3493	4015	4727	5301	5961	6986	l/h
	Pressure drops plant side	10	14	13	16	15	20	kPa
	Water flow rate source side	4530	5233	6134	6916	7779	9163	l/h
	Pressure drops source side	18	24	22	27	26	36	kPa
W30W7	Cooling capacity	23,2	26,6	31,4	35,2	39,6	46,2	kW
	Power input	5,13	5,87	6,96	7,77	8,71	10,2	kW
	EER	4,52	4,53	4,51	4,53	4,55	4,53	-
	Water flow rate plant side	3999	4582	5406	6058	6813	7963	l/h
	Pressure drops plant side	14	18	16	20	19	26	kPa
	Water flow rate source side	4899	5604	6621	7403	8325	9707	l/h
	Pressure drops source side	20	26	24	29	28	38	kPa
B30W7	Cooling capacity	23,0	26,3	31,1	34,8	39,2	45,9	kW
	Power input	5,15	5,90	7,00	7,82	8,77	10,3	kW
	EER	4,47	4,46	4,44	4,45	4,47	4,46	-
	Water flow rate plant side	3947	4531	5354	5989	6744	7911	l/h
	Pressure drops plant side	13	17	16	20	19	26	kPa
	Water flow rate source side	5263	6029	7132	7963	8964	10483	l/h
	Pressure drops source side	24	31	29	35	34	46	kPa

NOMINAL performances - Standard plants

IH	Acoustic setting up : AB and AS	30.1	35.1	40.1	45.1	50.1	55.1	
W10W45	Heating capacity	26,5	30,4	35,9	40,2	45,2	52,9	kW
	Power input	6,21	7,14	8,47	9,47	10,7	12,5	kW
	COP	4,27	4,26	4,24	4,24	4,22	4,23	-
	Water flow rate plant side	4588	5266	6222	6952	7821	9141	l/h
	Pressure drops plant side	17	23	21	26	25	34	kPa
	Water flow rate source side	5835	6718	7919	8874	9977	11721	l/h
	Pressure drops source side	28	36	34	42	40	54	kPa
B0W45	Heating capacity	20,6	23,6	27,9	31,2	35,1	41,0	kW
	Power input	6,04	6,90	8,19	9,12	10,2	12,0	kW
	COP	3,41	3,42	3,41	3,42	3,44	3,42	-
	Water flow rate plant side	3580	4084	4831	5405	6083	7108	l/h
	Pressure drops plant side	11	14	13	16	16	21	kPa
	Water flow rate source side	4670	5338	6299	7079	7969	9353	l/h
	Pressure drops source side	19	25	23	29	28	37	kPa

Data declared according to EN 14511. The values are referred to units without options or accessories. Brine = water with 30% ethylene glycol.

W10W65 = source: water in 10°C out 7°C / plant: water in 55°C out 65°C
 W10W55 = source: water in 10°C out 7°C / plant: water in 47°C out 55°C
 W10W45 = source: water in 10°C out 7°C / plant: water in 40°C out 45°C
 W10W35 = source: water in 10°C out 7°C / plant: water in 30°C out 35°C
 W30W7 = source: water in 30°C out 35°C / plant: water in 12°C out 7°C
 W30W18 = source: water in 30°C out 35°C / plant: water in 23°C out 18°C

B0W65 = source: brine in 0°C out -3°C / plant: water in 55°C out 65°C
 B0W55 = source: brine in 0°C out -3°C / plant: water in 47°C out 55°C
 B0W45 = source: brine in 0°C out -3°C / plant: water in 40°C out 45°C
 B0W35 = source: brine in 0°C out -3°C / plant: water in 30°C out 35°C
 B30W7 = source: brine in 30°C out 35°C / plant: water in 12°C out 7°C
 B30W18 = source: brine in 30°C out 35°C / plant: water in 23°C out 18°C

NOMINAL performances - HIGH temperature and plants

IP	Acoustic setting up : AB and AS	30.1	35.1	40.1	45.1	50.1	55.1	
W10W55	Heating capacity	23,5	27,0	31,9	35,6	40,1	47,1	kW
	Power input	7,09	8,07	9,61	10,7	12,0	14,0	kW
	COP	3,31	3,35	3,32	3,33	3,34	3,36	-
	Water flow rate plant side	2561	2942	3476	3879	4369	5121	l/h
	Pressure drops plant side	6	7	7	9	8	11	kPa
	Water flow rate source side	4717	5452	6418	7176	8090	9548	l/h
	Pressure drops source side	19	24	23	28	27	37	kPa
B0W55	Heating capacity	18,6	21,4	25,2	28,3	31,8	37,3	kW
	Power input	6,81	7,75	9,21	10,2	11,5	13,3	kW
	COP	2,73	2,76	2,74	2,77	2,77	2,80	-
	Water flow rate plant side	2027	2332	2746	3084	3465	4064	l/h
	Pressure drops plant side	4	5	4	6	5	7	kPa
	Water flow rate source side	3767	4368	5113	5790	6490	7699	l/h
	Pressure drops source side	13	17	15	20	19	26	kPa

NOMINAL performances - HIGH temperature plants

IH	Acoustic setting up : AB and AS	30.1	35.1	40.1	45.1	50.1	55.1	
W10W55	Heating capacity	24,0	27,5	32,5	36,4	41,0	48,0	kW
	Power input	7,17	8,17	9,72	10,8	12,2	14,1	kW
	COP	3,35	3,37	3,34	3,37	3,36	3,40	-
	Water flow rate plant side	2615	2996	3541	3966	4468	5219	l/h
	Pressure drops plant side	6	8	7	9	9	12	kPa
	Water flow rate source side	4840	5569	6561	7376	8319	9777	l/h
	Pressure drops source side	20	25	24	29	28	39	kPa
B0W55	Heating capacity	19,1	21,8	25,8	28,9	32,5	38,0	kW
	Power input	6,89	7,83	9,32	10,3	11,6	13,4	kW
	COP	2,77	2,78	2,77	2,81	2,80	2,84	-
	Water flow rate plant side	2081	2375	2811	3149	3541	4141	l/h
	Pressure drops plant side	4	5	5	6	6	8	kPa
	Water flow rate source side	3904	4470	5272	5949	6681	7890	l/h
	Pressure drops source side	14	18	16	21	20	27	kPa

TECHNICAL DATA	30.1	35.1	40.1	45.1	50.1	55.1	
Power supply	400-3-50						V-ph-Hz
Compressor type	scroll						-
N° compressors / N° refrigerant circuits	1 / 1						n°
Plant side heat exchanger type	stainless steel brazed plates						-
Source side heat exchanger type	stainless steel brazed plates						-
Hydraulic fittings	1"1/2 M						-
Hydraulic fittings heat recovery (VD)	1"1/4 M						-

ACOUSTIC PERFORMANCES

Base acoustic setting up (AB)	30.1	35.1	40.1	45.1	50.1	55.1	
Sound power level	63	64	65	66	67	68	dB(A)
Sound pressure level at 1 metre	47	48	49	50	51	52	dB(A)
Sound pressure level at 5 metres	37	38	39	40	41	42	dB(A)
Sound pressure level at 10 metres	32	33	34	35	36	37	dB(A)
Low noise acoustic setting up (AS)	30.1	35.1	40.1	45.1	50.1	55.1	
Sound power level	57	58	59	60	61	62	dB(A)
Sound pressure level at 1 metre	41	42	43	44	45	46	dB(A)
Sound pressure level at 5 metres	31	32	33	34	35	36	dB(A)
Sound pressure level at 10 metres	26	27	28	29	30	31	dB(A)

The acoustic performances are referred to units operating in cooling mode at nominal conditions W10W35.

Unit placed in free field on reflecting surface (directional factor equal to 2).

The sound power level is measured according to ISO 3744 standard.

The sound pressure level is calculated according to ISO 3744 and is referred to a distance of 1/5/10 metres from the external surface of the unit.

DIMENSIONS AND MINIMUM OPERATING AREA

Respect the free area around the unit as shown in figure in order to guarantee a good accessibility and facilitate maintenance and control operations.

A	600 mm
B	600 mm

