

> RHA

AIR-WATER CHILLERS AND HEAT PUMPS FOR OUTDOOR INSTALLATION



Available range

Unit type

IR	Chiller
IP	Heat pump (reversible on the refrigerant side)
BR	Chiller Brine
BP	Heat pump Brine (reversible on the refrigerant side)

Version

VB	Base version
VD	Desuperheater version
VR	Total recovery version

Acoustic setting up

AB	Base setting up
AS	Low noise setting up
AX	eXtra low noise setting up

Source temperature level

M	Medium temperature level
A	High temperature level

Unit description

This series of air-water chillers and heat pumps satisfies the cooling and heating requirements of residential plants of large size.

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

The refrigerant circuit, contained in a compartment protected from the air flow to simplify the maintenance operations, is equipped with scroll compressors mounted on damper supports, brazed plate heat exchanger, electronic expansion valve, reverse cycle valve, dehydrator

filter, axial fans with safety protection grilles, finned coil made of copper pipes and aluminium louvered fins. The circuit is protected by a safety gas valve, high and low pressure switches and differential pressure switch on the plate heat exchanger.

The plate heat exchanger and all the hydraulic pipes are thermally insulated in order to avoid condensate generation and to reduce thermal losses.

All the units can be equipped with variable speed fans control that allows the units to operate with low outdoor temperatures in cooling and high outdoor temperature in heating and permits to reduce noise emissions in such operating conditions.

The low noise acoustic setting up (AS) is obtained, starting from the base setting up (AB), reducing the rotational speed of the fans and mounting sound jackets on the compressors and the technical compartment is clad with soundproofing material of suitable thickness.

The eXtra low noise acoustic setting up (AX) is obtained, starting from the low noise setting up (AS), further reducing the rotational speed of the fans and using finned coil with bigger surface.

All the units are supplied with a management and control electrical panel containing general switch, phase presence and correct sequence controller, microprocessor controller with display and all the other electrical components with IP54 minimum protection degree.

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

Options

Storing and pumping module available in the configurations :

- storage tank arranged as buffer on the flow or as primary-secondary buffer
- 1 or 2 pumps
- standard or high head pump
- Refrigerant circuit pressures visualization
- high and low pressure gauges
- high and low pressure transducers

High temperature thermostat

Compressor starting

- standard (contactors)
- soft starter

Fans control

- on-off control
- modulating control (condensation / evaporation control)

Compressor power factor correction

Electrical load protection

- fuses
- thermal magnetic circuit breakers

Coil condensate tray

Accessories

Rubber vibration dampers

Spring vibration dampers

Coil protection grilles

Tank antifreeze electrical heater

Remote control

Modbus serial interface on RS485

Programmer clock

Phase sequence and voltage controller

Water flow switch

Victaulic hydraulic fittings

NOMINAL performances - Standard plants - EUROVENT certified data

IR	Base setting up (AB)	350.5	390.6	440.6	490.6	560.6	630.6	
A35W7	Cooling capacity	351	374	439	494	558	625	kW
	Power input	120	128	149	169	189	213	kW
	EER	2,93	2,92	2,95	2,92	2,95	2,93	-
	ESEER	4,24	4,24	4,27	4,24	4,28	4,25	-
	Pressure drops	47	54	48	60	45	56	kPa
IR	Low noise setting up (AS)	350.5	390.6	440.6	490.6	560.6	630.6	
A35W7	Cooling capacity	337	359	421	474	536	600	kW
	Power input	127	137	159	181	203	228	kW
	EER	2,65	2,62	2,65	2,62	2,64	2,63	-
	ESEER	4,11	4,06	4,10	4,06	4,09	4,08	-
	Pressure drops	43	50	44	55	41	52	kPa
IR	eXtra low noise setting up (AX)	350.5	390.6	440.6	490.6	560.6	630.6	
A35W7	Cooling capacity	330	352	413	464	525	588	kW
	Power input	131	141	163	186	208	234	kW
	EER	2,52	2,50	2,53	2,49	2,52	2,51	-
	ESEER	4,21	4,17	4,23	4,17	4,22	4,20	-
	Pressure drops	42	47	42	53	40	49	kPa
IP	Base acoustic setting up (AB)	350.5	390.6	440.6	490.6	560.6	630.6	
A35W7	Cooling capacity	341	364	426	480	540	608	kW
	Power input	118	127	148	167	187	211	kW
	EER	2,89	2,87	2,88	2,87	2,89	2,88	-
	ESEER	4,19	4,16	4,17	4,17	4,19	4,18	-
	Pressure drops	45	51	45	57	42	53	kPa
A7W45	Heating capacity	370	393	456	516	576	658	kW
	Power input	120	128	148	169	188	217	kW
	COP	3,08	3,07	3,08	3,05	3,06	3,03	-
	Pressure drops	53	59	51	66	48	62	kPa
IP	Low noise setting up (AS)	350.5	390.6	440.6	490.6	560.6	630.6	
A35W7	Cooling capacity	327	349	409	461	518	584	kW
	Power input	126	135	158	179	201	226	kW
	EER	2,60	2,59	2,59	2,58	2,58	2,58	-
	ESEER	4,02	4,01	4,01	3,99	3,99	4,01	-
	Pressure drops	41	47	41	52	38	49	kPa
A7W45	Heating capacity	355	377	438	495	553	632	kW
	Power input	115	122	142	161	180	207	kW
	COP	3,09	3,09	3,08	3,07	3,07	3,05	-
	Pressure drops	48	54	47	61	44	57	kPa
IP	eXtra low noise setting up (AX)	350.5	390.6	440.6	490.6	560.6	630.6	
A35W7	Cooling capacity	321	342	400	451	508	572	kW
	Power input	129	138	162	183	206	232	kW
	EER	2,49	2,48	2,47	2,46	2,47	2,47	-
	ESEER	4,16	4,14	4,12	4,12	4,12	4,12	-
	Pressure drops	39	45	39	50	37	47	kPa
A7W45	Heating capacity	352	373	433	490	547	625	kW
	Power input	113	120	139	158	176	203	kW
	COP	3,12	3,11	3,12	3,10	3,11	3,08	-
	Pressure drops	47	53	46	59	43	56	kPa

A35W7 = source : air in 35°C d.b. / plant : water in 12°C out 7°C
 A35W18 = source : air in 35°C d.b. / plant : water in 23°C out 18°C
 A7W45 = source : air in 7°C d.b. 6°C w.b. / plant : water in 40°C out 45°C
 A7W35 = source : air in 7°C d.b. 6°C w.b. / plant : water in 30°C out 35°C

TECHNICAL DATA	350.5	390.6	440.6	490.6	560.6	630.6	
Power supply	400 - 3 - 50						V-ph-Hz
Compressor type	scroll						-
N° compressors / N° refrigerant circuits	5 / 2	6 / 2					n°
Plant side heat exchanger type	stainless steel brazed plates						-
Source side heat exchanger type	finned coil						-
Fans type	axial						-
N° fans	8	10			12		n°
Tank volume	700						l
Hydraulic fittings	4" VICTAULIC						-

NOMINAL performances - Standard plants

IR	Base setting up (AB)	350.5	390.6	440.6	490.6	560.6	630.6	
A35W7	Cooling capacity	348	371	436	489	554	619	kW
	Power input	123	131	152	174	193	219	kW
	EER	2,83	2,83	2,87	2,81	2,87	2,83	-
	Water flow rate	16,8	17,9	21,0	23,6	26,7	29,9	l/s
	Pressure drops	47	54	48	60	45	56	kPa
IP	Base setting up (AB)	350.5	390.6	440.6	490.6	560.6	630.6	
A35W7	Cooling capacity	339	361	423	476	536	603	kW
	Power input	120	130	151	171	191	216	kW
	EER	2,83	2,78	2,80	2,78	2,81	2,79	-
	Water flow rate	16,3	17,4	20,4	22,9	25,8	29,0	l/s
	Pressure drops	45	51	45	57	42	53	kPa
A7W45	Heating capacity	373	397	460	521	580	664	kW
	Power input	123	132	152	174	192	223	kW
	COP	3,03	3,01	3,03	2,99	3,02	2,98	-
	Water flow rate	17,7	18,8	21,8	24,7	27,5	31,4	l/s
	Pressure drops	53	59	51	66	48	62	kPa

Data declared according to EN 14511. The values are referred to units without options and accessories.

NOMINAL performances - Radiant plants

IR	Base setting up (AB)	350.5	390.6	440.6	490.6	560.6	630.6	
A35W18	Cooling capacity	444	472	555	622	706	788	kW
	Power input	131	142	164	188	208	236	kW
	EER	3,39	3,32	3,38	3,31	3,39	3,34	-
	Water flow rate	21,5	22,9	26,8	30,2	34,1	38,2	l/s
	Pressure drops	77	88	78	98	73	91	kPa
IP	Base setting up (AB)	350.5	390.6	440.6	490.6	560.6	630.6	
A35W18	Cooling capacity	431	460	539	605	684	767	kW
	Power input	130	139	162	185	205	233	kW
	EER	3,32	3,31	3,33	3,27	3,34	3,29	-
	Water flow rate	20,9	22,3	26,1	29,4	33,0	37,2	l/s
	Pressure drops	73	83	74	93	68	87	kPa
A7W35	Heating capacity	378	402	466	528	588	673	kW
	Power input	103	110	127	146	160	186	kW
	COP	3,67	3,65	3,67	3,62	3,68	3,62	-
	Water flow rate	17,9	19,0	22,1	25,0	27,9	31,8	l/s
	Pressure drops	54	61	53	67	49	63	kPa

Data declared according to EN 14511. The values are referred to units without options and accessories.

Acoustic performances

	Base setting up (AB)	350.5	390.6	440.6	490.6	560.6	630.6	
Sound power level		95	95	96	96	97	97	dB(A)
Sound pressure level at 1 metre		75	75	76	76	76	76	dB(A)
Sound pressure level at 5 metres		67	67	68	68	69	69	dB(A)
Sound pressure level at 10 metres		63	63	64	64	65	65	dB(A)
	Low noise setting up (AS)	350.5	390.6	440.6	490.6	560.6	630.6	
Sound power level		89	89	90	90	91	91	dB(A)
Sound pressure level at 1 metre		69	69	70	70	70	70	dB(A)
Sound pressure level at 5 metres		61	61	62	62	63	63	dB(A)
Sound pressure level at 10 metres		57	57	58	58	59	59	dB(A)
	eXtra low noise setting up (AX)	350.5	390.6	440.6	490.6	560.6	630.6	
Sound power level		86	86	87	87	88	88	dB(A)
Sound pressure level at 1 metre		66	66	67	67	67	67	dB(A)
Sound pressure level at 5 metres		58	58	59	59	60	60	dB(A)
Sound pressure level at 10 metres		54	54	55	55	56	56	dB(A)

The acoustic performances are referred to units operating in cooling mode at nominal conditions A35W7.

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.

OPERATING LIMITS	Unit type	Cooling		Heating		
		min	max	min	max	
Outdoor air inlet temperature	IR, BR, IP, BP	-10*	55**	-10	40*	(°C)
Water outlet temperature	IR, IP	5	25	30	55	(°C)
Water outlet temperature	BR, BP	-12	25	30	55	(°C)
Water outlet temperature (VD)	IR, BR, IP, BP	30	70	30	70	(°C)
Water outlet temperature (VR)	IR, BR	30	55	-	-	(°C)

* with fans modulating control option (condensation / evaporation control)

** with ATC outdoor high temperature protection function

VD and VR versions

These units allow to recover the heating power, otherwise wasted on air, through an additional heat exchanger.

The **Desuperheater Version (VD)** allow the hot water production at temperatures between 30 and 70°C through the partial heat recovery of the condensation heat.

The **Total Recovery Version (VR)** allows the cold water production and, at the same time, the hot water production at temperatures between 30 and 55°C through the total recovery of the condensation heat.

Desuperheater Version (VD)

IR	Base setting up (AB)	350.5	390.6	440.6	490.6	560.6	630.6	
A35W7 - W45	Cooling capacity	365	389	457	514	581	650	kW
	Total power input	117	125	146	165	184	207	kW
	EER	3,12	3,11	3,13	3,12	3,16	3,14	-
	Water flow rate	17,5	18,6	21,8	24,6	27,8	31,0	l/s
	Water pressure drop	51	58	51	65	49	60	kPa
	Heating recovery capacity	87,7	93,4	110	123	139	156	kW
	Water flow rate recovery	4,19	4,46	5,26	5,88	6,64	7,45	l/s
	Water pressure drop recovery	24	27	25	32	31	39	kPa
IP	Base setting up (AB)	350.5	390.6	440.6	490.6	560.6	630.6	
A35W7 - W45	Cooling capacity	355	379	443	499	562	632	kW
	Total power input	115	123	144	163	183	205	kW
	EER	3,09	3,08	3,08	3,06	3,07	3,08	-
	Water flow rate	16,9	18,1	21,2	23,9	26,8	30,2	l/s
	Water pressure drop	48	55	49	62	45	57	kPa
	Heating recovery capacity	85,2	90,7	106	120	135	152	kW
	Water flow rate recovery	4,07	4,33	5,06	5,73	6,45	7,26	l/s
	Water pressure drop recovery	23	26	24	30	29	36	kPa

Total Recovery Version (VR)

IR	Base setting up (AB)	350.5	390.6	440.6	490.6	560.6	630.6	
A35W7 - W45	Cooling capacity	365	389	457	514	581	650	kW
	Total power input	101	109	126	145	161	184	kW
	EER	3,61	3,57	3,63	3,54	3,61	3,53	-
	EER with recovery	8,17	8,08	8,19	8,03	8,16	8,03	-
	Water flow rate	17,5	18,6	21,8	24,6	27,8	31,0	l/s
	Water pressure drop	51	58	51	65	49	60	kPa
	Heating recovery capacity	461	493	577	652	734	824	kW
	Water flow rate recovery	22,0	23,6	27,6	31,2	35,1	39,4	l/s
Water pressure drop recovery	52	60	51	66	54	68	kPa	

A35W7 - W45 = source : air in 35°C d.b. / plant : water in 12°C out 7°C / Recovery : water in 40°C out 45°C

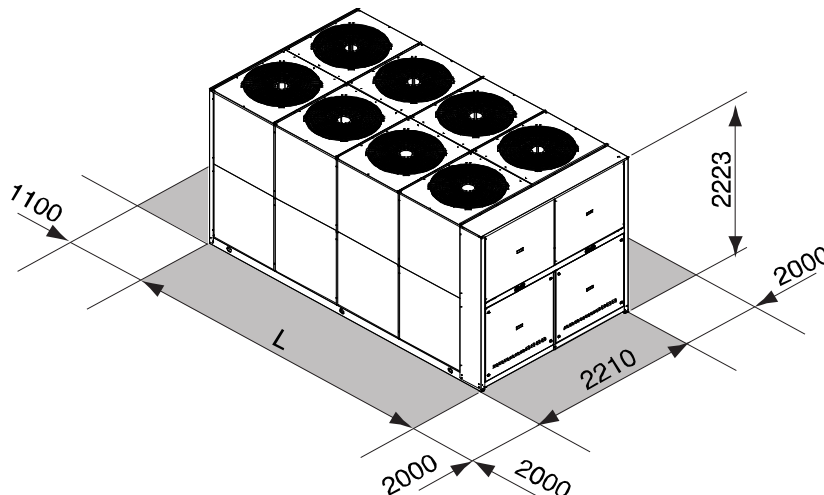
CONTROL SYSTEM

The units are equipped with a controller designed to ensure energy saving and unit efficiency. Available functions :

- ATC outdoor high temperature protection function
- Dynamic defrost
- Sound management
- Climatic control in heating and in cooling mode
- Double set point function
- Demand limit
- Integrative heating
- Remote stand by
- Remote cooling-heating



DIMENSIONS - MINIMUM OPERATING AREA - WEIGHT



	350.5	390.6	440.6	490.6	560.6	630.6	
L	5030	5030	5030	5030	5963	5963	mm
Operating maximum weight	4849	5058	5120	5199	5489	5568	kg