

> RGC

AIR-WATER CHILLERS AND HEAT PUMPS FOR INDOOR 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 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.

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, thermostatic expansion valve (standard for IR) or electronic expansion valve (standard for IP / option

for IR), reverse cycle valve, dehydrator filter, double inlet centrifugal fans with forward curved blades, finned coil made of copper pipes and aluminium louvered fins with subcooling section. 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), mounting sound jackets on the compressors and the technical compartment is clad with soundproofing material of suitable thickness.

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
- modulating pump

Expansion valve

- thermostatic
- electronic (standard for IP)

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

Low temperature kit (standard for IP)

High and low pressure gauges

High temperature thermostat

Coil shut off valves

Outdoor air sensor

Water flow switch

Victaulic hydraulic fittings

NOMINAL performances - Standard plants

IR	Base setting up (AB) and Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35W7	Cooling capacity	45,0	53,0	58,1	68,2	78,1	90,3	101	111	125	142	157	179	198	kW
	Power input	15,7	18,8	20,8	24,1	28,0	32,5	35,9	39,9	45,1	51,5	57,1	64,6	71,6	kW
	EER	2,87	2,82	2,79	2,83	2,79	2,78	2,81	2,78	2,77	2,76	2,75	2,77	2,77	-
	Water flow rate	2,16	2,56	2,80	3,29	3,76	4,35	4,87	5,35	6,02	6,83	7,55	8,60	9,56	l/s
	Pressure drops	40	56	55	51	50	48	46	44	48	47	48	48	50	kPa
IP	Base setting up (AB) and Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
	Cooling capacity	43,5	52,4	57,0	66,7	73,6	88,5	98,3	109	121	137	153	177	196	kW
	Power input	15,5	19,0	20,7	24,1	27,0	32,3	35,7	39,8	44,5	50,3	56,3	63,5	71,2	kW
	EER	2,81	2,76	2,75	2,77	2,73	2,74	2,75	2,74	2,72	2,72	2,72	2,79	2,75	-
	Water flow rate	2,09	2,53	2,75	3,21	3,54	4,26	4,73	5,26	5,83	6,59	7,36	8,50	9,46	l/s
A7W45	Heating capacity	48,1	58,1	63,2	74,5	83,0	99,6	110	125	136	154	173	197	216	kW
	Power input	15,6	19,1	20,9	24,4	27,6	33,5	35,9	41,1	44,9	51,8	56,9	65,1	71,7	kW
	COP	3,08	3,04	3,02	3,05	3,01	2,97	3,06	3,04	3,03	2,97	3,04	3,03	3,01	-
	Water flow rate	2,28	2,75	2,99	3,53	3,93	4,72	5,21	5,92	6,45	7,31	8,17	9,32	10,2	l/s
	Pressure drops	45	65	63	59	55	57	53	54	55	54	56	56	57	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) and Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35W18	Cooling capacity	58,3	68,5	75,1	88,2	100,6	116	131	144	162	184	202	231	257	kW
	Power input	17,1	20,8	22,9	26,4	30,8	35,6	39,4	43,6	49,4	56,4	62,5	70,7	78,5	kW
	EER	3,41	3,29	3,28	3,34	3,27	3,26	3,32	3,30	3,28	3,26	3,23	3,27	3,27	-
	Water flow rate	2,81	3,33	3,64	4,27	4,87	5,64	6,35	6,98	7,84	8,89	9,8	11,2	12,4	l/s
	Pressure drops	68	95	93	86	84	81	78	75	81	80	81	81	84	kPa
IP	Base setting up (AB) and Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
	Cooling capacity	56,3	67,8	73,7	86,3	95,2	115	127	141	157	177	198	228	254	kW
	Power input	16,9	20,9	22,8	26,4	29,7	35,2	39,0	43,4	48,8	54,9	61,7	69,5	78,1	kW
	EER	3,33	3,24	3,23	3,27	3,21	3,27	3,26	3,25	3,22	3,22	3,21	3,28	3,25	-
	Water flow rate	2,72	3,29	3,57	4,18	4,60	5,54	6,16	6,83	7,60	8,55	9,56	11,0	12,3	l/s
A7W35	Heating capacity	51,1	61,7	67,1	79,0	88,0	106	117	132	144	164	183	209	229	kW
	Power input	12,9	15,7	17,3	20,1	22,7	27,9	29,8	34,0	37,1	43,0	47,2	54,3	59,6	kW
	COP	3,96	3,93	3,88	3,93	3,88	3,80	3,93	3,88	3,88	3,81	3,88	3,85	3,84	-
	Water flow rate	2,42	2,91	3,17	3,74	4,17	5,02	5,54	6,26	6,83	7,74	8,65	9,89	10,8	l/s
	Pressure drops	50	72	70	66	61	64	60	60	62	60	63	63	64	kPa

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

Acoustic performances

Base setting up (AB)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
Sound power level	88	88	89	89	89	91	91	91	96	97	97	98	98	dB(A)
Sound pressure level at 1 metre	70	70	71	71	71	73	73	73	78	79	79	80	80	dB(A)
Sound pressure level at 5 metres	61	61	62	62	62	65	65	65	69	70	70	71	71	dB(A)
Sound pressure level at 10 metres	56	56	57	57	57	59	59	59	64	65	65	66	66	dB(A)
Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
Sound power level	85	85	86	86	86	88	88	88	93	94	94	95	95	dB(A)
Sound pressure level at 1 metre	67	67	68	68	68	70	70	70	75	76	76	77	77	dB(A)
Sound pressure level at 5 metres	58	58	59	59	59	62	62	62	66	67	67	68	68	dB(A)
Sound pressure level at 10 metres	53	53	54	54	54	56	56	56	61	62	62	63	63	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).

Unit ducted on the suction and on the flow side for 2 meters.

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*	50	-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 fan modulating control option (condensation / evaporation control)

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) and Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35W7 - W45	Cooling capacity	47,1	55,6	60,9	71,6	81,8	94,6	106	116	131	149	164	187	208	kW
	Total power input	15,0	17,8	19,7	22,8	26,6	31,0	34,3	38,0	42,9	49,1	54,4	61,5	68,1	kW
	EER	3,14	3,12	3,09	3,14	3,08	3,05	3,09	3,05	3,05	3,03	3,01	3,04	3,05	-
	Water flow rate	2,25	2,66	2,91	3,42	3,91	4,52	5,06	5,54	6,26	7,12	7,84	8,93	9,94	l/s
	Water pressure drop	43	60	59	55	54	52	50	47	52	51	52	52	54	kPa
	Heating recovery capacity	13,5	15,7	17,6	20,0	23,6	27,1	30,4	34,4	38,4	44,0	49,3	55,4	61,3	kW
	Water flow rate recovery	0,65	0,75	0,84	0,96	1,13	1,29	1,45	1,64	1,83	2,10	2,36	2,65	2,93	l/s
	Water pressure drop recovery	6	9	11	14	19	15	18	11	14	18	22	18	21	kPa
IP	Base setting up (AB) and Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35W7 - W45	Cooling capacity	45,6	55,0	59,8	69,9	77,1	92,8	103	114	127	144	160	185	206	kW
	Total power input	14,8	18,0	19,6	22,9	25,8	30,8	34,1	37,9	42,4	48,0	53,7	60,6	67,8	kW
	EER	3,08	3,06	3,05	3,05	2,99	3,01	3,02	3,01	3,00	3,00	2,98	3,05	3,04	-
	Water flow rate	2,18	2,63	2,86	3,34	3,68	4,43	4,92	5,45	6,07	6,88	7,64	8,84	9,84	l/s
	Water pressure drop	41	59	57	53	48	50	47	46	49	48	49	51	53	kPa
	Heating recovery capacity	13,0	15,2	17,0	19,4	22,9	26,2	29,2	33,2	37,1	42,4	47,5	52,4	58,1	kW
	Water flow rate recovery	0,62	0,73	0,81	0,93	1,09	1,25	1,40	1,59	1,77	2,03	2,27	2,50	2,78	l/s
	Water pressure drop recovery	6	8	10	13	18	14	17	10	13	17	21	16	19	kPa

Total Recovery Version (VR)

IR	Base setting up (AB) and Low noise setting up (AS)	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
A35W7 - W45	Cooling capacity	47,1	55,6	60,9	71,6	81,8	94,6	106	116	131	149	164	187	208	kW
	Total power input	14,8	18,0	19,6	22,9	25,8	30,8	34,1	37,9	42,4	48,0	53,7	60,6	67,8	kW
	EER	3,08	3,06	3,05	3,05	2,99	3,01	3,02	3,01	3,00	3,00	2,98	3,05	3,04	-
	EER with recovery	7,88	7,73	7,79	7,84	7,59	7,92	7,95	7,74	7,69	7,85	7,71	7,90	7,84	-
	Water flow rate	2,25	2,66	2,91	3,42	3,91	4,52	5,06	5,54	6,26	7,12	7,84	8,93	9,94	l/s
	Water pressure drop	43	60	59	55	54	52	50	47	52	51	52	52	54	kPa
	Heating recovery capacity	60,0	71,2	77,8	91,4	105	120	135	148	168	190	210	238	265	kW
	Water flow rate recovery	2,87	3,40	3,72	4,37	5,02	5,73	6,45	7,07	8,03	9,08	10,0	11,4	12,7	l/s
Water pressure drop recovery	35	49	41	45	50	48	52	47	52	51	52	55	55	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

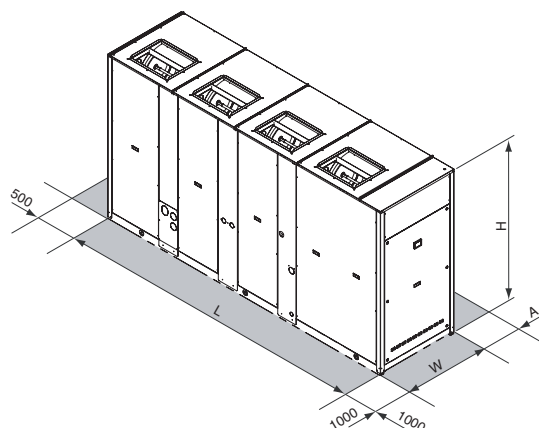
CONTROL SYSTEM

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

- Adaptive function
- Dynamic defrost
- Sound management
- Climatic control in heating and in cooling mode
- Economy function
- Demand limit
- Integrative heating
- Remote stand by
- Remote cooling-heating



DIMENSIONS - MINIMUM OPERATING AREA - WEIGHT



	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	200.2	
L			2501				3343			3343		4097		mm
W			954				1104			1104		1104		mm
H			1930				1793			2193		2193		mm
A				1600						2000				mm
Operating maximum weight	1078	1082	1102	1143	1168	1684	1765	1825	2000	2042	2094	2423	2467	kg