> RMA

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)

Versions

VB	Base Version
VP	Pump version
VA	Tank version

Acoustic setting up

AB	Base setting up
AS	Low noise setting up

Unit description

This series of air-water chillers and heat pumps satisfies the cooling and heating requirements of residential plants of small and medium 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 compressor mounted on damper supports, brazed plate heat exchanger, thermostatic expansion valve, reverse cycle valve, axial fans with safety protection grilles, finned coil made of copper pipes and aluminium louvered fins. The circuit is protected by 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.

All the units are supplied with an outdoor temperature sensor, already installed on the unit, in order to realize the climatic control.

All the units are provided with a phase presence and correct sequence controller device.

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
- not present (VB - base version)
- standard, high head or modulating pump (VP - pump version)
- tank and standard, high head or modulating pump (VA - tank version)

Integrative electrical heaters
- not present
- standard in the tank

Compressor starting
- standard (contactors)
- soft starter

Fans control
- on-off control
- modulating control (condensation / evaporation control) standard for AS unit

Electrical loads protection
- fuses
- thermal magnetic circuit breakers

Compressor power factor correction

Accessories

Rubber vibration dampers
Coil protection grille
Tank antifreeze electrical heater
Remote control
Modbus serial interface on RS485
Programmer clock
Phase sequence and voltage controller

NET NOMINAL performances - Standard plants - EUROVENT certified data

IR	Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
A35W7	Cooling capacity	19,9	22,1	25,8	30,8	35,6	40,2	kW
	Power input	6,82	7,50	8,76	10,8	12,3	13,9	kW
	EER	2,92	2,95	2,95	2,85	2,89	2,89	W/W
	ESEER	3,26	3,29	3,28	3,20	3,24	3,23	W/W
	Water flow rate	0,953	1,06	1,23	1,48	1,71	1,93	l/s
	Pressure drops	26	31	26	36	31	38	kPa
IR	Low noise setting up (AS)	19.1	22.1	26.1	30.1	35.1	40.1	
A35W7	Cooling capacity	19,1	21,2	24,8	29,6	34,2	38,6	kW
	Power input	7,34	8,09	9,42	11,6	13,3	15,0	kW
	EER	2,60	2,62	2,63	2,55	2,57	2,57	W/W
	ESEER	2,89	2,93	2,93	2,86	2,88	2,87	W/W
	Water flow rate	0,915	1,02	1,19	1,42	1,64	1,85	l/s
	Pressure drops	24	29	24	33	28	36	kPa
IP	Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
A35W7	Cooling capacity	19,5	21,7	25,3	30,2	34,9	39,4	kW
	Power input	6,75	7,42	8,66	10,7	12,2	13,8	kW
	EER	2,89	2,92	2,92	2,82	2,86	2,86	W/W
	ESEER	3,22	3,27	3,26	3,18	3,21	3,19	W/W
	Water flow rate	0,934	1,04	1,21	1,45	1,67	1,89	l/s
	Pressure drops	25	30	25	35	29	37	kPa
A7W45	Heating capacity	21,0	23,3	27,1	32,5	37,6	42,4	kW
	Power input	6,49	7,14	8,33	10,3	11,7	13,4	kW
	COP	3,24	3,26	3,25	3,16	3,21	3,16	W/W
	Water flow rate	0,991	1,10	1,28	1,53	1,77	2,00	l/s
	Pressure drops	27	33	27	38	33	41	kPa
IP	Low noise setting up (AS)	19.1	22.1	26.1	30.1	35.1	40.1	
A35W7	Cooling capacity	18,7	20,8	24,3	29,1	33,6	37,8	kW
	Power input	7,27	8,00	9,33	11,4	13,1	14,9	kW
	EER	2,57	2,60	2,60	2,55	2,56	2,54	W/W
	ESEER	2,86	2,89	2,89	2,83	2,84	2,84	W/W
	Water flow rate	0,896	1,00	1,16	1,39	1,61	1,81	l/s
	Pressure drops	23	28	23	32	27	34	kPa
A7W45	Heating capacity	19,9	22,2	25,8	31,0	35,8	40,3	kW
	Power input	6,22	6,85	7,98	9,88	11,3	12,8	kW
	COP	3,20	3,24	3,23	3,14	3,17	3,15	W/W
	Water flow rate	0,939	1,05	1,22	1,46	1,69	1,90	l/s
	Pressure drops	25	30	25	35	30	37	kPa

NET NOMINAL performances - Radiant plants

IR	Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
A35W18	Cooling capacity	24,6	27,3	31,9	38,1	44,1	49,6	kW
	Power input	7,09	7,81	9,11	11,2	12,8	14,6	kW
	EER	3,47	3,50	3,50	3,40	3,45	3,40	W/W
	Water flow rate	1,18	1,31	1,53	1,83	2,12	2,39	l/s
	Pressure drops	39	47	38	54	46	58	kPa
IP	Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
A35W18	Cooling capacity	24,2	26,8	31,3	37,4	43,2	48,7	kW
	Power input	7,01	7,73	9,01	11,1	12,7	14,4	kW
	EER	3,45	3,47	3,47	3,37	3,40	3,38	W/W
	Water flow rate	1,16	1,29	1,50	1,80	2,08	2,34	l/s
	Pressure drops	37	45	37	52	44	56	kPa
A7W35	Heating capacity	21,40	23,80	27,70	33,20	38,40	43,30	kW
	Power input	5,48	6,03	7,03	8,71	9,91	11,30	kW
	COP	3,91	3,95	3,94	3,81	3,87	3,83	W/W
	Water flow rate	1,01	1,13	1,31	1,57	1,82	2,05	l/s
	Pressure drops	29	35	29	40	34	43	kPa

Data declared according to **EN 14511**. The values are referred to units without options and accessories.
EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit
COP (Coefficient Of Performance) = ratio of the total heating capacity to the effective power input of the unit

ESEER (European Seasonal Energy Efficiency Ratio)
____ = Unit in **A CLASS.**
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

Acoustic performances

Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
Sound power level (E)	77	77	78	81	82	82	dB(A)
Sound pressure level at 1 meter	61	62	62	65	66	66	dB(A)
Sound pressure level at 5 meters	51	51	52	55	55	56	dB(A)
Sound pressure level at 10 meters	46	46	47	50	50	50	dB(A)
Low noise setting up (AS)	**19.1**	**22.1**	**26.1**	**30.1**	**35.1**	**40.1**	
Sound power level (E)	74	74	75	78	79	79	dB(A)
Sound pressure level at 1 meter	58	59	59	62	63	63	dB(A)
Sound pressure level at 5 meters	48	48	49	52	53	53	dB(A)
Sound pressure level at 10 meters	43	43	44	47	48	48	dB(A)

(E): EUROVENT certified data
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 9614 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.

Technical data

Unit	19.1	22.1	26.1	30.1	35.1	40.1	
Power supply	400 - 3+N - 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	finned coil						-
Fans type	axial						-
N° fans	1						n°
Tank volume	85						l
Hydraulic fittings	1"1/4 VICTAULIC						-

Electrical data

Standard unit	19.1	22.1	26.1	30.1	35.1	40.1	
FLA - Full load current at maximum tolerated conditions	18,8	20,8	22,9	25,9	29,9	34,0	A
FLI - Full load power input at maximum tolerated conditions	10,8	12,1	13,4	15,8	18,4	21,0	kW
MIC - Maximum instantaneous current of the unit	98	114	121	129	144	178	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	55	64	68	73	82	102	A
Unit with high head modulating pump	**19.1**	**22.1**	**26.1**	**30.1**	**35.1**	**40.1**	
FLA - Full load current at maximum tolerated conditions	24,9	26,9	29,0	32,0	38,1	42,2	A
FLI - Full load power input at maximum tolerated conditions	12,0	13,3	16,6	17,0	20,0	26,1	kW
MIC - Maximum instantaneous current of the unit	104,1	120,1	127,1	135,1	152,2	186,2	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	61,1	70,1	74,1	79,1	90,2	110,2	A

Operating range

		Cooling		Heating		
Temperatura	**Unit type**	**min**	**max**	**min**	**max**	
Outdoor air inlet temperature	IR, BR, IP, BP	-10*	48	-15	42	(°C)
Water outlet temperature	IR, IP	5	25	30	55	(°C)
Water outlet temperature	BR, BP	-12	25	30	55	(°C)

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

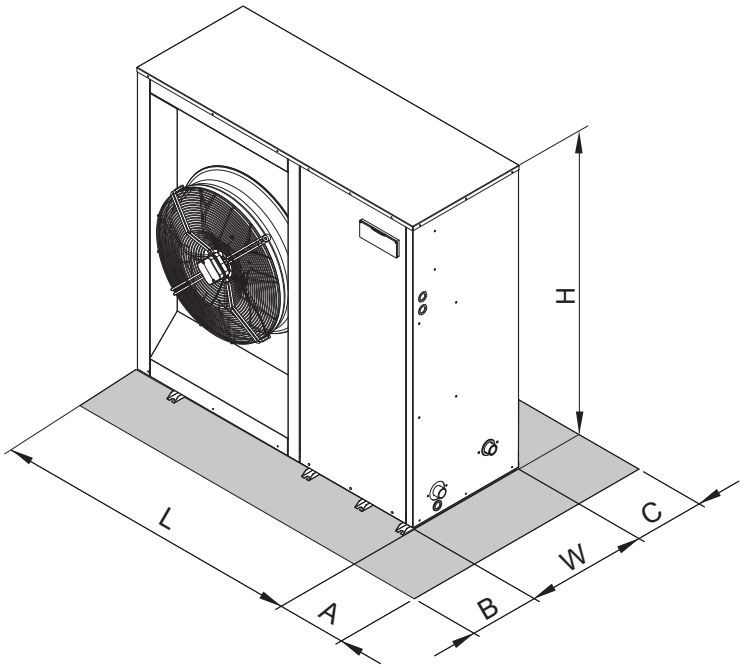
CONTROL SYSTEM

The unit is managed by a microprocessor controller to which, through a wiring board, all the electrical loads and the control devices are connected. The user interface is realized by a display and four buttons that allow to view and, if necessary, modify all the operating parameters of the unit. It's available, as an accessory, a remote control that reports all the functionalities of the user interface placed on the unit.

The main functions available are :

- water temperature management (through set point adjustment)
- adaptive function
- climatic control in heating and in cooling mode (automatic set point adjustment according to outdoor air temperature)
- dynamic defrost cycle management according to outdoor air temperature
- alarm memory management and diagnostic
- fans management by means of continuous rotational speed control
- pump management
- integrative electrical heaters management in heating mode (2 step logic)
- compressor and pump operating hours recording
- serial communication through Modbus protocol
- remote stand by
- remote cooling-heating
- general alarm digital output

DIMENSIONS AND MINIMUM OPERATING AREA



	19.1	22.1	26.1	30.1	35.1	40.1	
L		1494			1704		mm
W		576			576		mm
H		1453			1453		mm
A		400			400		mm
B		600			600		mm
C		200			200		mm
Maximum weight operation (VA Tank version)	349	352	371	385	410	412	kg

> RMA HE

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)

Versions

VB	Base Version
VP	Pump version
VA	Tank version

Acoustic setting up

AB	Base setting up
AS	Low noise setting up

Unit description

This series of air-water chillers and heat pumps satisfies the cooling and heating requirements of residential plants of small and medium 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 compressor mounted on damper supports, brazed plate heat exchanger, thermostatic expansion valve, reverse cycle valve, axial fans with safety protection grilles, finned coil made of copper pipes and aluminium louvered fins. The circuit is protected by 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.

All the units are supplied with an outdoor temperature sensor, already installed on the unit, in order to realize the climatic control.

All the units are provided with a phase presence and correct sequence controller device.

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
- not present (VB - base version)
- standard, high head or modulating pump (VP - pump version)
- tank and standard, high head or modulating pump (VA - tank version)

Integrative electrical heaters
- not present
- standard in the tank

Compressor starting
- standard (contactors)
- soft starter

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

Electrical loads protection
- fuses
- thermal magnetic circuit breakers

Compressor power factor correction

Accessories

Rubber vibration dampers
Coil protection grille
Tank antifreeze electrical heater
Remote control
Modbus serial interface on RS485
Programmer clock
Phase sequence and voltage controller

NET NOMINAL performances - Standard plants - EUROVENT certified data

IR	Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
A35W7	Cooling capacity	20,1	22,3	26,1	31,5	36,6	41,3	kW
	Power input	6,51	7,15	8,29	10,3	11,9	13,5	kW
	EER	3,09	3,12	3,15	3,06	3,08	3,06	W/W
	ESEER	3,44	3,48	3,51	3,44	3,45	3,45	W/W
	Water flow rate	0,963	1,07	1,25	1,51	1,75	1,98	l/s
	Pressure drops	26	32	26	37	32	41	kPa
IR	**Low noise setting up (AS)**	**19.1**	**22.1**	**26.1**	**30.1**	**35.1**	**40.1**	
A35W7	Cooling capacity	19,3	21,4	25,1	30,3	35,2	39,8	kW
	Power input	7,02	7,71	8,94	11,1	12,8	14,4	kW
	EER	2,75	2,78	2,81	2,73	2,75	2,76	W/W
	ESEER	3,06	3,10	3,12	3,07	3,08	3,09	W/W
	Water flow rate	0,925	1,02	1,20	1,45	1,69	1,91	l/s
	Pressure drops	24	29	24	35	30	38	kPa
IP	**Base setting up (AB)**	**19.1**	**22.1**	**26.1**	**30.1**	**35.1**	**40.1**	
A35W7	Cooling capacity	19,7	21,9	25,6	30,9	35,9	40,5	kW
	Power input	6,45	7,08	8,20	10,2	11,8	13,4	kW
	EER	3,05	3,09	3,12	3,03	3,04	3,02	W/W
	ESEER	3,40	3,46	3,47	3,42	3,40	3,40	W/W
	Water flow rate	0,944	1,05	1,23	1,48	1,72	1,94	l/s
	Pressure drops	25	31	25	36	31	39	kPa
A7W45	Heating capacity	21,2	23,5	27,4	33,3	38,6	43,8	kW
	Power input	6,21	6,82	7,89	9,79	11,3	12,9	kW
	COP	3,41	3,45	3,47	3,40	3,42	3,40	W/W
	Water flow rate	1,00	1,11	1,29	1,57	1,82	2,06	l/s
	Pressure drops	28	34	28	40	34	43	kPa
IP	**Low noise setting up (AS)**	**19.1**	**22.1**	**26.1**	**30.1**	**35.1**	**40.1**	
A35W7	Cooling capacity	18,9	21,0	24,6	29,7	34,5	39,0	kW
	Power input	6,95	7,63	8,84	11,0	12,7	14,3	kW
	EER	2,72	2,75	2,78	2,70	2,72	2,73	W/W
	ESEER	3,03	3,07	3,09	3,04	3,05	3,05	W/W
	Water flow rate	0,906	1,01	1,18	1,43	1,65	1,87	l/s
	Pressure drops	23	28	23	34	29	36	kPa
A7W45	Heating capacity	20,1	22,3	26,1	31,7	36,7	41,7	kW
	Power input	5,95	6,54	7,56	9,38	10,9	12,4	kW
	COP	3,38	3,41	3,45	3,38	3,37	3,36	W/W
	Water flow rate	1,25	1,39	1,63	1,97	2,28	2,58	l/s
	Pressure drops	25	31	25	36	31	40	kPa

NET NOMINAL performances - Radiant plants

IR	Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
A35W18	Cooling capacity	26,1	28,9	33,9	40,8	47,4	53,5	kW
	Power input	6,67	7,35	8,49	10,6	12,2	13,9	kW
	EER	3,91	3,93	3,99	3,85	3,89	3,85	W/W
	Water flow rate	1,25	1,39	1,63	1,97	2,28	2,58	l/s
	Pressure drops	43	52	43	62	53	67	kPa
IP	**Base setting up (AB)**	**19.1**	**22.1**	**26.1**	**30.1**	**35.1**	**40.1**	
A35W18	Cooling capacity	25,5	28,4	33,2	40,0	46,5	52,5	kW
	Power input	6,60	7,27	8,40	10,5	12,1	13,7	kW
	EER	3,86	3,91	3,95	3,81	3,84	3,83	W/W
	Water flow rate	1,23	1,36	1,59	1,93	2,24	2,53	l/s
	Pressure drops	41	50	41	59	51	64	kPa
A7W35	Heating capacity	21,6	24,0	28,0	34,0	39,4	44,7	kW
	Power input	5,24	5,76	6,66	8,28	9,57	10,9	kW
	COP	4,12	4,17	4,20	4,11	4,12	4,10	W/W
	Water flow rate	1,02	1,14	1,33	1,61	1,87	2,11	l/s
	Pressure drops	29	36	29	42	36	46	kPa

Data declared according to **EN 14511**. The values are referred to units without options and accessories.
EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit
COP (Coefficient Of Performance) = ratio of the total heating capacity to the effective power input of the unit

ESEER (European Seasonal Energy Efficiency Ratio)
____ = Unit in **A CLASS.**
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

Acoustic performances

Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
Sound power level (E)	77	77	78	81	82	82	dB(A)
Sound pressure level at 1 meter	61	62	62	65	66	66	dB(A)
Sound pressure level at 5 meters	51	51	52	55	55	56	dB(A)
Sound pressure level at 10 meters	46	46	47	50	50	50	dB(A)
Low noise setting up (AS)	**19.1**	**22.1**	**26.1**	**30.1**	**35.1**	**40.1**	
Sound power level (E)	74	74	75	78	79	79	dB(A)
Sound pressure level at 1 meter	58	59	59	62	63	63	dB(A)
Sound pressure level at 5 meters	48	48	49	52	53	53	dB(A)
Sound pressure level at 10 meters	43	43	44	47	48	48	dB(A)

(E): EUROVENT certified data
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 9614 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.

Technical data

Unità	19.1	22.1	26.1	30.1	35.1	40.1	
Power supply	400 - 3+N - 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	finned coil						-
Fans type	axial						-
N° fans	1						n°
Tank volume	85						l
Hydraulic fittings	1"1/4 VICTAULIC						-

Electrical data

Standard unit	19.1	22.1	26.1	30.1	35.1	40.1	
FLA - Full load current at maximum tolerated conditions	18,8	20,8	22,9	25,9	29,9	34,0	A
FLI - Full load power input at maximum tolerated conditions	10,8	12,1	13,4	15,8	18,4	21,0	kW
MIC - Maximum instantaneous current of the unit	98	114	121	129	144	178	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	55	64	68	73	82	102	A
Unit with high head modulating pump	**19.1**	**22.1**	**26.1**	**30.1**	**35.1**	**40.1**	
FLA - Full load current at maximum tolerated conditions	24,9	26,9	29,0	32,0	38,1	42,2	A
FLI - Full load power input at maximum tolerated conditions	12,0	13,3	16,6	17,0	20,0	26,1	kW
MIC - Maximum instantaneous current of the unit	104,1	120,1	127,1	135,1	152,2	186,2	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	61,1	70,1	74,1	79,1	90,2	110,2	A

Operating range

		Cooling		Heating		
Temperatura	**Unit type**	**min**	**max**	**min**	**max**	
Outdoor air inlet temperature	IR, BR, IP, BP	-10*	48	-15	42	(°C)
Water outlet temperature	IR, IP	5	25	30	55	(°C)
Water outlet temperature	BR, BP	-12	25	30	55	(°C)

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

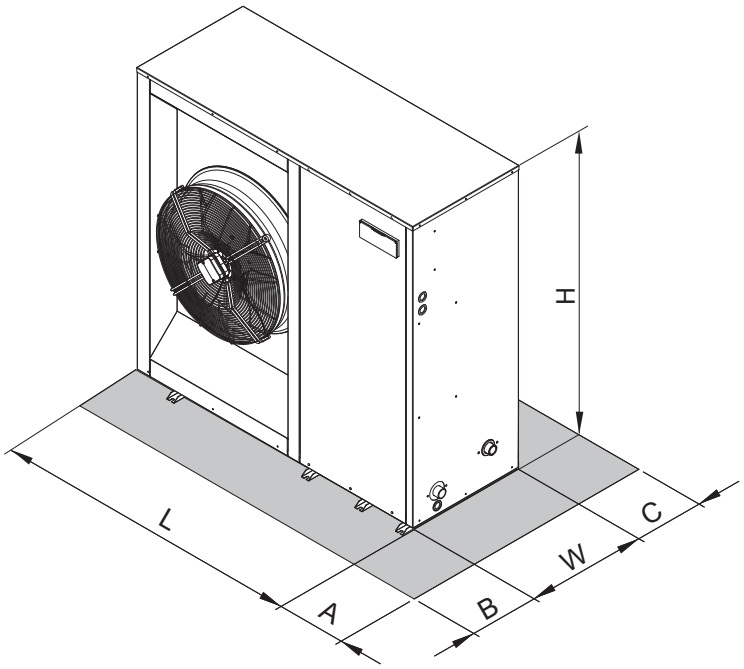
CONTROL SYSTEM

The unit is managed by a microprocessor controller to which, through a wiring board, all the electrical loads and the control devices are connected. The user interface is realized by a display and four buttons that allow to view and, if necessary, modify all the operating parameters of the unit. It's available, as an accessory, a remote control that reports all the functionalities of the user interface placed on the unit.

The main functions available are :

- water temperature management (through set point adjustment)
- adaptive function
- climatic control in heating and in cooling mode (automatic set point adjustment according to outdoor air temperature)
- dynamic defrost cycle management according to outdoor air temperature
- alarm memory management and diagnostic
- fans management by means of continuous rotational speed control
- pump management
- integrative electrical heaters management in heating mode (2 step logic)
- compressor and pump operating hours recording
- serial communication through Modbus protocol
- remote stand by
- remote cooling-heating
- general alarm digital output

DIMENSIONS AND MINIMUM OPERATING AREA



	19.1	22.1	26.1	30.1	35.1	40.1	
L		1494			1704		mm
W		576			576		mm
H		1453			1453		mm
A		400			400		mm
B		600			600		mm
C		200			200		mm
Maximum weight operation (VA Tank version)	364	367	391	412	438	440	kg

> RGA

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 medium 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, thermostatic expansion valve (standard for IR) or electronic expansion valve (standard for IP / option for IR), reverse cycle valve, dehydrator filter, axial fans with safety protection grilles, 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), 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
- 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

NET NOMINAL performances - Standard plants - EUROVENT certified data

IR	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	
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	W/W
	ESEER	3,93	3,90	3,85	3,91	3,84	3,93	3,86	3,93	3,82	3,89	3,77	3,80	3,82	W/W
	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
IR	**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	43,6	51,5	56,3	66,2	75,7	87,6	97,8	108	121	138	152	174	193	kW
	Power input	16,3	19,4	21,6	24,9	29,2	33,7	37,3	41,4	46,8	53,4	59,2	67,0	74,3	kW
	EER	2,67	2,65	2,61	2,66	2,59	2,60	2,62	2,61	2,59	2,58	2,57	2,60	2,60	W/W
	ESEER	3,81	3,79	3,74	3,80	3,70	3,81	3,73	3,83	3,69	3,79	3,66	3,69	3,70	W/W
	Water flow rate	2,10	2,48	2,71	3,19	3,65	4,21	4,71	5,21	5,83	6,64	7,31	8,36	9,27	l/s
	Pressure drops	38	53	52	48	47	45	43	42	45	44	45	45	47	kPa
IR	**eXtra low noise setting up (AX)**	**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	42,7	50,3	55,1	64,7	74,0	85,6	95,6	105	118	134	149	169	188	kW
	Power input	16,3	19,8	22,1	25,4	29,9	32,8	38,3	42,6	48,1	54,3	60,3	68,8	76,2	kW
	EER	2,62	2,54	2,49	2,55	2,47	2,61	2,50	2,46	2,45	2,47	2,47	2,46	2,47	W/W
	ESEER	3,96	3,88	3,80	3,89	3,76	4,09	3,79	3,86	3,74	3,86	3,76	3,73	3,75	W/W
	Water flow rate	2,05	2,42	2,65	3,12	3,56	4,12	4,60	5,06	5,69	6,45	7,17	8,12	9,03	l/s
	Pressure drops	36	50	49	46	45	43	41	39	43	42	43	43	45	kPa
IP	**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**	
A35W7	Cooling capacity	43,5	52,4	57,0	66,7	73,6	88,5	98	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	W/W
	ESEER	3,84	3,82	3,80	3,80	3,73	3,87	3,78	3,87	3,73	3,84	3,72	3,82	3,79	W/W
	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
	Pressure drops	37	55	53	49	44	46	43	43	45	44	46	47	49	kPa
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	W/W
	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
IP	**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	41,8	50,4	54,8	64,0	70,6	85,0	94,4	105	116	131	147	170	189	kW
	Power input	16,0	20,0	21,8	25,5	28,6	34,1	37,7	42,0	47,0	53,1	59,5	67,1	75,3	kW
	EER	2,61	2,52	2,51	2,51	2,47	2,49	2,50	2,50	2,47	2,47	2,47	2,53	2,51	W/W
	ESEER	3,69	3,60	3,58	3,58	3,52	3,65	3,55	3,67	3,52	3,60	3,52	3,60	3,57	W/W
	Water flow rate	2,01	2,43	2,64	3,08	3,40	4,09	4,54	5,06	5,59	6,31	7,07	8,17	9,08	l/s
	Pressure drops	35	50	49	45	41	42	40	39	41	40	42	43	45	kPa
A7W45	Heating capacity	46,9	56,5	61,7	72,5	80,9	97,0	107	122	133	150	168	192	211	kW
	Power input	14,9	18,2	20,0	23,2	26,4	31,9	34,2	39,2	42,8	49,4	54,3	62,1	68,5	kW
	COP	3,15	3,10	3,09	3,13	3,06	3,04	3,13	3,11	3,11	3,04	3,09	3,09	3,08	W/W
	Water flow rate	2,23	2,68	2,92	3,44	3,83	4,60	5,06	5,78	6,31	7,12	7,98	9,08	9,99	l/s
	Pressure drops	43	61	60	56	52	54	50	51	53	51	54	54	55	kPa
IP	**eXtra low noise setting up (AX)**	**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	41,0	49,3	53,7	62,8	69,3	83,3	92,5	102	114	129	144	166	185	kW
	Power input	17,1	21,1	23,0	26,8	30,1	35,9	39,8	44,3	49,5	56,0	62,7	70,8	79,4	kW
	EER	2,40	2,34	2,33	2,34	2,30	2,32	2,32	2,30	2,30	2,30	2,30	2,34	2,33	W/W
	ESEER	3,62	3,56	3,55	3,55	3,49	3,62	3,53	3,60	3,50	3,60	3,49	3,56	3,53	W/W
	Water flow rate	1,97	2,37	2,58	3,02	3,33	4,00	4,45	4,92	5,49	6,21	6,93	7,98	8,89	l/s
	Pressure drops	33	48	47	43	39	41	38	37	40	39	40	41	43	kPa
A7W45	Heating capacity	45,2	54,5	59,4	70,0	78,0	93,5	104	118	128	145	162	184	203	kW
	Power input	14,2	17,3	19,0	22,2	25,1	30,4	32,7	37,3	40,8	47,1	51,7	59,1	65,1	kW
	COP	3,18	3,15	3,13	3,15	3,11	3,08	3,18	3,16	3,14	3,08	3,13	3,11	3,12	W/W
	Water flow rate	2,15	2,58	2,81	3,32	3,70	4,43	4,92	5,59	6,07	6,88	7,69	8,74	9,60	l/s
	Pressure drops	40	57	55	52	48	50	47	48	49	48	50	50	50	kPa

NET NOMINAL performances - Radiant plants

IR	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	
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	W/W
	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)**	**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	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	W/W
	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
	Pressure drops	63	92	89	82	75	78	74	72	77	74	77	79	83	kPa
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	W/W
	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.
EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit
COP (Coefficient Of Performance) = ratio of the total heating capacity to the effective power input of the unit

ESEER (European Seasonal Energy Efficiency Ratio)
____ = Unit in **A CLASS.**
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

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 (E)	82	82	83	84	84	85	85	85	86	87	87	88	88	dB(A)
Sound pressure level at 1 meter	64	64	65	66	66	67	67	67	68	69	69	69	69	dB(A)
Sound pressure level at 5 meters	55	55	56	57	57	58	58	58	59	60	60	61	61	dB(A)
Sound pressure level at 10 meters	50	50	51	52	52	53	53	53	54	55	55	56	56	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 (E)	79	79	80	81	81	82	82	82	83	84	84	85	85	dB(A)
Sound pressure level at 1 meter	61	61	62	63	63	64	64	64	65	66	66	66	66	dB(A)
Sound pressure level at 5 meters	52	52	53	54	54	55	55	55	56	57	57	58	58	dB(A)
Sound pressure level at 10 meters	47	47	48	49	49	50	50	50	51	52	52	53	53	dB(A)
eXtra low noise setting up (AX)	**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 (E)	77	77	78	79	79	80	80	80	81	82	82	83	83	dB(A)
Sound pressure level at 1 meter	59	59	60	61	61	62	62	62	63	64	64	64	64	dB(A)
Sound pressure level at 5 meters	50	50	51	52	52	53	53	53	54	55	55	56	56	dB(A)
Sound pressure level at 10 meters	45	45	46	47	47	48	48	48	49	50	50	51	51	dB(A)

(E): EUROVENT certified data
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 9614 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.

Technical data

Unit	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	
Power supply	400 - 3+N - 50					400 - 3 - 50								V-ph-Hz
Compressor type	scroll													-
N° compressors / N° refrigerant circuits	2 / 1													n°
Plant side heat exchanger type	stainless steel brazed plates													-
Source side heat exchanger type	finned coil													-
Fans type	axial													-
N° fans	2		3			2				3		4		n°
Tank volume	200					400						460		l
Hydraulic fittings	2" VICTAULIC					2" 1/2 VICTAULIC								-

Electrical data

Standard unit	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	
FLA - Full load current at maximum tolerated conditions	40,2	45,7	53,3	58,7	69,6	75,5	90,0	97,9	106	123	136	159	170	A
FLI - Full load power input at maximum tolerated conditions	21,6	24,4	28,4	31,0	36,2	44,0	55,0	60,5	66,0	75,7	83,3	95,4	103	kW
MIC - Maximum instantaneous current of the unit	134	143	149	173	213	264	259	267	267	348	361	355	391	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	89,3	96,3	101	117	143	174	175	183	183	200	246	248	272	A
Unit with high head modulating pump	**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**	
FLA - Full load current at maximum tolerated conditions	46,3	51,8	59,4	64,8	76,0	81,6	96,1	107	115	132	147	169	180	A
FLI - Full load power input at maximum tolerated conditions	25,1	27,9	31,9	34,5	42,1	47,5	58,5	65,1	70,6	80,3	89,6	102	109	kW
MIC - Maximum instantaneous current of the unit	140	150	155	179	219	270	265	276	276	357	372	365	402	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	95,4	102	107	123	150	180	181	192	192	209	257	258	282	A

Operative range

		Cooling		Heating		
Temperature	Unit type	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 fans 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.

Desupeheater Version (VD) - NET NOMINAL performances

IR	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	
A35W7 - W45	Cooling capacity	46,8	55,1	60,3	71	81,1	93,8	105	115	130	148	163	185	206	kW
	Total power input	15,3	18,3	20,3	23,4	27,3	31,8	35,1	38,9	44	50,3	55,8	63	69,9	kW
	EER	3,05	3	2,98	3,03	2,97	2,95	2,99	2,96	2,95	2,94	2,92	2,94	2,95	W/W
	HRE	3,93	3,86	3,84	3,88	3,83	3,8	3,86	3,85	3,83	3,81	3,8	3,82	3,83	W/W
	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	23,6	27,1	30,4	34,4	38,4	44	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	2,1	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)**	**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	45,3	54,5	59,3	69,3	76,5	92,1	102	113	126	143	159	183	204	kW
	Total power input	15,1	18,5	20,1	23,5	26,4	31,5	34,9	38,7	43,4	49,1	54,9	62,1	69,5	kW
	EER	3	2,94	2,94	2,95	2,9	2,92	2,93	2,92	2,9	2,91	2,89	2,95	2,94	W/W
	HRE	3,86	3,76	3,79	3,78	3,77	3,75	3,77	3,78	3,76	3,77	3,75	3,8	3,77	W/W
	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	15,2	17	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	1,4	1,59	1,77	2,03	2,27	2,5	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) - NET NOMINAL performances

IR	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	
A35W7 - W45	Cooling capacity	46,8	55,1	60,3	71	81,1	93,8	105	115	130	148	163	185	206	kW
	Total power input	13,9	16,9	18,4	21,4	25,3	27,9	31,1	35	40	44,4	49,9	55,3	62,1	kW
	EER	3,36	3,25	3,28	3,31	3,2	3,36	3,38	3,29	3,25	3,33	3,26	3,35	3,32	W/W
	HRE	7,67	7,46	7,52	7,58	7,35	7,67	7,71	7,52	7,45	7,61	7,47	7,65	7,59	W/W
	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	71,2	77,8	91,4	105	120	135	148	168	190	210	238	265	kW
	Water flow rate recovery	2,87	3,4	3,72	4,37	5,02	5,73	6,45	7,07	8,03	9,08	10	11,4	12,7	l/s
	Water pressure drop recovery	35	49	41	45	50	48	52	47	52	51	52	55	55	kPa

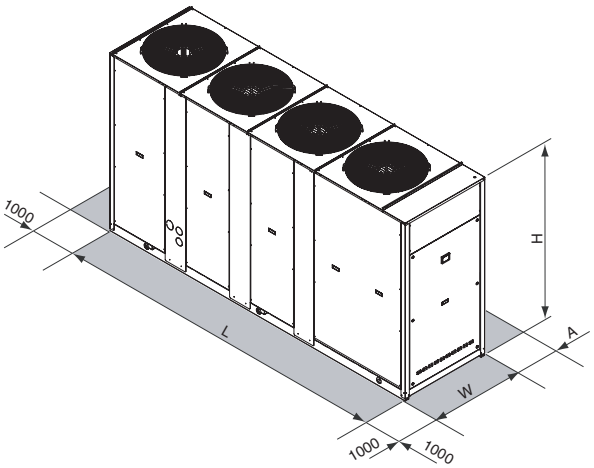
Data declared according to **EN 14511**. The values are referred to units without options and accessories.
EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit
HRE (Heat Recovery Efficiency) = ratio of the total capacity of the system (heating plus cooling capacity) to the effectice power input
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*	1027	1031	1053	1088	1107	1587	1668	1749	1833	1891	1935	2260	2296	kg

> RGA HE

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 medium 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, thermostatic expansion valve (standard for IR) or electronic expansion valve (standard for IP / option for IR), reverse cycle valve, dehydrator filter, axial fans with safety protection grilles, 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), 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
- 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

NET NOMINAL performances - Standard plants - EUROVENT certified data

IR	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	
A35W7	Cooling capacity	47,2	55,9	63,1	70,5	83,4	94,9	106	120	133	153	173	197	kW
	Power input	14,9	17,2	19,8	22,1	27,2	31,2	34,6	38,6	42,7	50,0	55,5	64,6	kW
	EER	3,17	3,25	3,19	3,19	3,07	3,04	3,06	3,11	3,11	3,06	3,12	3,05	W/W
	ESEER	4,31	4,44	4,34	4,39	4,17	4,27	4,20	4,37	4,26	4,31	4,27	4,16	W/W
	Water flow rate	2,26	2,69	3,03	3,39	4,00	4,56	5,11	5,78	6,40	7,36	8,31	9,46	l/s
	Pressure drops	24	34	33	41	31	32	34	33	35	35	38	39	kPa
IR	**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**	
A35W7	Cooling capacity	45,0	53,3	60,1	67,3	79,5	90,5	101	114	127	146	165	188	kW
	Power input	15,5	17,9	20,6	22,9	27,7	31,9	35,6	39,8	44,3	51,3	57,2	66,3	kW
	EER	2,90	2,98	2,92	2,94	2,87	2,84	2,84	2,86	2,87	2,85	2,88	2,84	W/W
	ESEER	4,10	4,23	4,13	4,17	4,06	4,12	4,03	4,17	4,08	4,15	4,09	4,02	W/W
	Water flow rate	2,16	2,56	2,89	3,23	3,82	4,34	4,87	5,49	6,12	7,02	7,93	9,03	l/s
	Pressure drops	22	31	30	37	28	29	31	30	32	32	35	36	kPa
IR	**eXtra low noise setting up (AX)**	**40.2**	**50.2**	**60.2**	**70.2**	**80.2**	**90.2**	**100.2**	**115.2**	**130.2**	**145.2**	**160.2**	**180.2**	
A35W7	Cooling capacity	44,3	52,4	59,1	66,1	78,2	89,0	100	112	125	143	162	184	kW
	Power input	15,6	18,1	20,8	23,2	27,9	32,3	36,0	40,4	44,9	51,8	57,8	66,9	kW
	EER	2,84	2,90	2,84	2,85	2,80	2,76	2,76	2,77	2,78	2,76	2,80	2,75	W/W
	ESEER	4,26	4,36	4,31	4,33	4,22	4,28	4,18	4,32	4,22	4,31	4,26	4,17	W/W
	Water flow rate	2,12	2,51	2,84	3,18	3,75	4,27	4,78	5,40	6,02	6,88	7,79	8,84	l/s
	Pressure drops	21	30	29	36	27	28	30	29	31	31	33	34	kPa
IP	**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**	
A35W7	Cooling capacity	45,3	53,6	60,7	67,8	81,3	92,4	103	115	128	147	166	191	kW
	Power input	14,6	17,1	19,4	21,7	26,7	30,2	33,8	37,8	41,8	48,5	54,3	62,8	kW
	EER	3,10	3,13	3,13	3,12	3,04	3,06	3,05	3,04	3,06	3,03	3,06	3,04	W/W
	ESEER	4,22	4,29	4,27	4,28	4,15	4,28	4,16	4,28	4,19	4,26	4,17	4,15	W/W
	Water flow rate	2,17	2,58	2,91	3,26	3,90	4,43	4,97	5,54	6,16	7,07	7,98	9,17	l/s
	Pressure drops	22	31	30	38	29	30	32	30	32	32	35	37	kPa
A7W45	Heating capacity	49,4	58,3	66,0	74,1	88,4	100	113	126	141	161	181	207	kW
	Power input	15,5	18,1	20,8	23,4	27,9	31,6	35,5	39,7	44,3	51,0	57,1	65,6	kW
	COP	3,19	3,22	3,17	3,17	3,17	3,16	3,18	3,17	3,18	3,16	3,17	3,16	W/W
	Water flow rate	2,35	2,77	3,13	3,52	4,20	4,77	5,35	5,97	6,69	7,64	8,60	9,84	l/s
	Pressure drops	26	36	35	44	34	35	37	35	38	38	41	42	kPa
IP	**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**	
A35W7	Cooling capacity	43,2	51,1	57,8	64,6	77,5	88,0	98,6	110	122	140	158	182	kW
	Power input	15,1	17,7	20,1	22,6	27,1	31,0	34,8	39,0	43,3	49,8	56,1	64,4	kW
	EER	2,86	2,89	2,88	2,86	2,86	2,84	2,83	2,82	2,82	2,81	2,82	2,83	W/W
	ESEER	4,00	4,07	4,07	4,06	4,03	4,13	4,01	4,08	4,00	4,10	4,00	4,00	W/W
	Water flow rate	2,07	2,45	2,78	3,11	3,72	4,22	4,73	5,26	5,88	6,74	7,60	8,74	l/s
	Pressure drops	20	28	28	35	27	27	29	27	30	29	32	33	kPa
A7W45	Heating capacity	48,1	56,8	64,2	72,2	86,0	97,7	110	123	137	157	176	202	kW
	Power input	14,9	17,5	20,0	22,7	26,4	30,1	34,0	38,2	42,8	48,8	54,8	62,7	kW
	COP	3,23	3,25	3,21	3,18	3,26	3,25	3,24	3,22	3,20	3,22	3,21	3,22	W/W
	Water flow rate	2,29	2,70	3,05	3,43	4,09	4,64	5,21	5,83	6,50	7,45	8,36	9,60	l/s
	Pressure drops	25	34	33	42	32	33	35	34	36	36	38	40	kPa
IP	**eXtra low noise setting up (AX)**	**40.2**	**50.2**	**60.2**	**70.2**	**80.2**	**90.2**	**100.2**	**115.2**	**130.2**	**145.2**	**160.2**	**180.2**	
A35W7	Cooling capacity	42,5	50,3	56,9	63,6	76,2	86,5	97,0	109	120	138	155	179	kW
	Power input	15,3	18,0	20,3	22,8	27,4	31,4	35,2	39,6	44,0	50,2	56,7	65,0	kW
	EER	2,78	2,79	2,80	2,79	2,78	2,75	2,76	2,75	2,73	2,75	2,73	2,75	W/W
	ESEER	4,16	4,21	4,22	4,22	4,19	4,28	4,15	4,26	4,15	4,28	4,15	4,17	W/W
	Water flow rate	2,04	2,41	2,73	3,05	3,66	4,15	4,65	5,21	5,78	6,64	7,45	8,60	l/s
	Pressure drops	20	27	27	33	26	27	28	27	29	28	31	32	kPa
A7W45	Heating capacity	47,6	56,1	63,4	71,3	85,0	96,5	109	121	136	155	174	199	kW
	Power input	14,7	17,2	19,6	22,2	25,9	29,5	33,3	37,4	42,0	47,7	53,6	61,3	kW
	COP	3,24	3,26	3,23	3,21	3,28	3,27	3,27	3,24	3,24	3,25	3,25	3,25	W/W
	Water flow rate	2,26	2,67	3,01	3,38	4,04	4,59	5,16	5,73	6,45	7,36	8,27	9,46	l/s
	Pressure drops	24	33	33	41	32	32	35	32	36	35	38	39	kPa

NET NOMINAL performances - Radiant plants

IR	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	
A35W18	Cooling capacity	61,2	72,4	81,7	91,3	108	123	138	156	172	198	224	254	kW
	Power input	16,2	18,9	21,6	24,2	29,6	34,0	37,7	42,2	46,7	54,5	60,6	70,6	kW
	EER	3,78	3,83	3,78	3,77	3,65	3,62	3,66	3,70	3,68	3,63	3,70	3,60	W/W
	Water flow rate	2,94	3,49	3,94	4,41	5,21	5,92	6,64	7,50	8,31	9,56	10,8	12,3	l/s
	Pressure drops	41	57	56	69	53	54	57	56	59	59	64	66	kPa
IP	**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**	
A35W18	Cooling capacity	58,8	69,5	78,6	87,8	105	120	134	150	167	190	215	248	kW
	Power input	15,9	18,6	21,2	23,8	28,9	32,9	36,9	41,1	45,6	52,8	59,3	68,6	kW
	EER	3,70	3,74	3,71	3,69	3,63	3,65	3,63	3,65	3,66	3,60	3,63	3,62	W/W
	Water flow rate	2,83	3,35	3,79	4,24	5,06	5,78	6,45	7,21	8,03	9,17	10,40	11,9	l/s
	Pressure drops	38	53	52	64	50	51	54	51	55	54	60	62	kPa
A7W35	Heating capacity	52,4	61,9	69,9	78,6	93,8	107	120	134	149	171	192	220	kW
	Power input	12,7	14,9	17,1	19,3	23,2	26,2	29,4	32,7	36,5	42,3	47,2	54,4	kW
	COP	4,13	4,15	4,09	4,07	4,04	4,08	4,08	4,10	4,08	4,04	4,07	4,04	W/W
	Water flow rate	2,49	2,94	3,32	3,73	4,45	5,06	5,69	6,35	7,07	8,12	9,13	10,4	l/s
	Pressure drops	29	41	40	50	38	39	42	40	43	43	46	47	kPa

Data declared according to **EN 14511**. The values are referred to units without options and accessories.
EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit
COP (Coefficient Of Performance) = ratio of the total heating capacity to the effective power input of the unit

ESEER (European Seasonal Energy Efficiency Ratio)
____ = Unit in **A CLASS.**
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

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	
Sound power level (E)	82	82	83	84	85	85	85	85	86	87	87	88	dB(A)
Sound pressure level at 1 meter	64	64	65	66	67	67	67	67	68	69	69	69	dB(A)
Sound pressure level at 5 meters	55	55	56	57	58	58	58	58	59	60	60	61	dB(A)
Sound pressure level at 10 meters	50	50	51	52	53	53	53	53	54	55	55	56	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**	
Sound power level (E)	79	79	80	81	82	82	82	82	83	84	84	85	dB(A)
Sound pressure level at 1 meter	61	61	62	63	64	64	64	64	65	66	66	66	dB(A)
Sound pressure level at 5 meters	52	52	53	54	55	55	55	55	56	57	57	58	dB(A)
Sound pressure level at 10 meters	47	47	48	49	50	50	50	50	51	52	52	53	dB(A)
eXtra low noise setting up (AX)	**40.2**	**50.2**	**60.2**	**70.2**	**80.2**	**90.2**	**100.2**	**115.2**	**130.2**	**145.2**	**160.2**	**180.2**	
Sound power level (E)	77	77	78	79	80	80	80	80	81	82	82	83	dB(A)
Sound pressure level at 1 meter	59	59	60	61	62	62	62	62	63	64	64	64	dB(A)
Sound pressure level at 5 meters	50	50	51	52	53	53	53	53	54	55	55	56	dB(A)
Sound pressure level at 10 meters	45	45	46	47	48	48	48	48	49	50	50	51	dB(A)

(E): EUROVENT certified data
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 9614 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.

Technical data

Unit	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
Power supply	400 - 3+N - 50				400 - 3 - 50								V-ph-Hz
Compressor type	scroll												-
N° compressors / N° refrigerant circuits	2 / 1												n°
Plant side heat exchanger type	stainless steel brazed plates												-
Source side heat exchanger type	finned coil												-
Fans type	axial												-
N° fans	2		3		2				3		4		n°
Tank volume	200				400					460			l
Hydraulic fittings	2" VICTAULIC				2" 1/2 VICTAULIC								-

Electrical data

Standard unit	40.2	50.2	60.2	70.2	80.2	90.2	100.2	115.2	130.2	145.2	160.2	180.2	
FLA - Full load current at maximum tolerated conditions	40,2	45,7	53,3	58,7	69,6	75,5	90,0	97,9	106	123	136	159	A
FLI - Full load power input at maximum tolerated conditions	21,6	24,4	28,4	31,0	36,2	44,0	55,0	60,5	66,0	75,7	83,3	95,4	kW
MIC - Maximum instantaneous current of the unit	134	143	149	173	213	264	259	267	267	348	361	355	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	89,3	96,3	101	117	143	174	175	183	183	200	246	248	A
Unit with high head modulating pump	**40.2**	**50.2**	**60.2**	**70.2**	**80.2**	**90.2**	**100.2**	**115.2**	**130.2**	**145.2**	**160.2**	**180.2**	
FLA - Full load current at maximum tolerated conditions	46,3	51,8	59,4	64,8	76,0	81,6	96,1	107	115	132	147	169	A
FLI - Full load power input at maximum tolerated conditions	25,1	27,9	31,9	34,5	42,1	47,5	58,5	65,1	70,6	80,3	89,6	102	kW
MIC - Maximum instantaneous current of the unit	140	150	155	179	219	270	265	276	276	357	372	365	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	95,4	102	107	123	150	180	181	192	192	209	257	258	A

Operative range

		Cooling		Heating		
Temperature	**Unit type**	**min**	**max**	**min**	**max**	
Outdoor air inlet temperature	IR, BR, IP, BP	-10*	50	-15	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)

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.

Desupeheater Version (VD) - NET NOMINAL performances

IR	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	
A35W7 - W45	Cooling capacity	49,1	58,1	65,5	73,3	86,7	98,6	110	125	138	159	180	205	kW
	Total power input	14,5	16,7	19,4	21,5	26,6	30,5	33,8	37,7	41,6	48,8	54,1	63,1	kW
	EER	**3,38**	**3,47**	**3,38**	**3,41**	**3,26**	**3,24**	**3,27**	**3,32**	**3,32**	**3,26**	**3,32**	**3,24**	**W/W**
	HRE	**4,36**	**4,48**	**4,36**	**4,4**	**4,21**	**4,18**	**4,22**	**4,28**	**4,29**	**4,21**	**4,29**	**4,19**	**W/W**
	Water flow rate	2,36	2,79	3,15	3,53	4,17	4,74	5,3	6,02	6,64	7,64	8,65	9,84	l/s
	Water pressure drop	26	37	36	44	34	35	37	36	38	38	41	42	kPa
	Heating recovery capacity	14,2	16,9	19	21,3	25,1	28,6	32,1	36,2	40,3	46,3	52,3	59,4	kW
	Water flow rate recovery	0,68	0,81	0,91	1,02	1,2	1,37	1,53	1,73	1,93	2,21	2,5	2,84	l/s
	Water pressure drop recovery	7	10	13	16	21	16	20	12	15	20	25	20	kPa
IP	**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**	
A35W7 - W45	Cooling capacity	47,1	55,8	63,1	70,4	84,6	96	107	120	133	153	173	199	kW
	Total power input	14,2	16,6	18,9	21,2	26	29,5	33	36,8	40,7	47,3	53,1	61,4	kW
	EER	**3,32**	**3,36**	**3,33**	**3,33**	**3,25**	**3,25**	**3,25**	**3,27**	**3,27**	**3,24**	**3,26**	**3,24**	**W/W**
	HRE	**4,28**	**4,34**	**4,3**	**4,3**	**4,19**	**4,2**	**4,2**	**4,21**	**4,22**	**4,18**	**4,2**	**4,17**	**W/W**
	Water flow rate	2,26	2,68	3,03	3,39	4,06	4,61	5,16	5,78	6,4	7,36	8,31	9,56	l/s
	Water pressure drop	24	34	33	41	32	33	35	33	35	35	38	40	kPa
	Heating recovery capacity	13,6	16,2	18,3	20,5	24,5	27,9	31,1	34,7	38,6	44,4	50,1	57,5	kW
	Water flow rate recovery	0,65	0,77	0,87	0,98	1,17	1,33	1,49	1,66	1,84	2,12	2,39	2,75	l/s
	Water pressure drop recovery	7	9	12	14	20	16	19	11	14	18	23	19	kPa

Total Recovery Version (VR) - NET NOMINAL performances

IR	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	
A35W7 - W45	Cooling capacity	49,1	58,1	65,5	73,3	86,7	98,6	110	125	138	159	180	205	kW
	Total power input	13,2	15,4	17,4	19,5	22,8	26,6	29,9	33,7	37,7	43	48,2	55,4	kW
	EER	**3,72**	**3,76**	**3,77**	**3,75**	**3,81**	**3,72**	**3,7**	**3,71**	**3,66**	**3,7**	**3,73**	**3,7**	**W/W**
	HRE	**8,39**	**8,47**	**8,49**	**8,46**	**8,55**	**8,39**	**8,35**	**8,37**	**8,27**	**8,36**	**8,42**	**8,34**	**W/W**
	Water flow rate	2,36	2,79	3,15	3,53	4,17	4,74	5,3	6,02	6,64	7,64	8,65	9,84	l/s
	Water pressure drop	26	37	36	44	34	35	37	36	38	38	41	42	kPa
	Heating recovery capacity	61,7	72,7	82,1	91,9	108	124	139	157	174	200	226	257	kW
	Water flow rate recovery	2,95	3,47	3,92	4,39	5,16	5,92	6,64	7,5	8,31	9,56	10,8	12,3	l/s
	Water pressure drop recovery	34	47	42	41	48	47	52	49	51	50	54	53	kPa

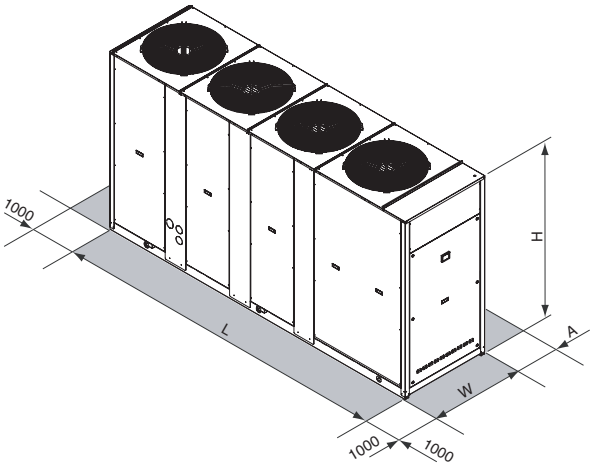
Data declared according to **EN 14511**. The values are referred to units without options and accessories.
EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit
HRE (Heat Recovery Efficiency) = ratio of the total capacity of the system (heating plus cooling capacity) to the effectice power input
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	
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*	1068	1072	1095	1132	1569	1650	1735	1877	1906	1967	2292	2350	kg

* Weight refers to the unit IP with tank and pumping module 2 pumps.

> RTA

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 medium 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 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), 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
- modulating pump

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

NET NOMINAL performances - Standard plants - EUROVENT certified data

IR	Base setting up (AB)	245.3	280.3	315.3	
A35W7	Cooling capacity	235	277	299	kW
	Power input	87,3	104	111	kW
	EER	2,69	2,66	2,69	W/W
	ESEER	3,86	3,85	3,89	W/W
	Water flow rate	11,3	13,4	14,4	l/s
	Pressure drops	54	60	53	kPa
IR	Low noise setting up (AS)	245.3	280.3	315.3	
A35W7	Cooling capacity	228	270	291	kW
	Power input	92,0	109	116	kW
	EER	2,48	2,48	2,51	W/W
	ESEER	3,71	3,74	3,74	W/W
	Water flow rate	11,0	13,0	14,0	l/s
	Pressure drops	51	57	50	kPa
IR	eXtra low noise setting up (AX)	245.3	280.3	315.3	
A35W7	Cooling capacity	223	264	285	kW
	Power input	94,0	111	118	kW
	EER	2,37	2,38	2,42	W/W
	ESEER	3,78	3,77	3,83	W/W
	Water flow rate	10,8	12,7	13,7	l/s
	Pressure drops	49	54	48	kPa
IP	Base setting up (AB)	245.3	280.3	315.3	
A35W7	Cooling capacity	226	268	289	kW
	Power input	85,3	101	108	kW
	EER	2,65	2,65	2,68	W/W
	ESEER	3,76	3,76	3,80	W/W
	Water flow rate	10,9	12,9	13,9	l/s
	Pressure drops	50	56	49	kPa
A7W45	Heating capacity	252	300	319	kW
	Power input	86,4	102	109	kW
	COP	2,92	2,93	2,93	W/W
	Water flow rate	11,9	14,2	15,1	l/s
	Pressure drops	60	67	58	kPa
IP	Low noise setting up (AS)	245.3	280.3	315.3	
A35W7	Cooling capacity	219	260	280	kW
	Power input	90,0	106	113	kW
	EER	2,43	2,45	2,48	W/W
	ESEER	3,60	3,61	3,64	W/W
	Water flow rate	10,6	12,5	13,5	l/s
	Pressure drops	47	52	47	kPa
A7W45	Heating capacity	242	288	306	kW
	Power input	81,6	96,9	103	kW
	COP	2,97	2,97	2,97	W/W
	Water flow rate	11,5	13,6	14,5	l/s
	Pressure drops	56	62	54	kPa
IP	eXtra low noise setting up (AX)	245.3	280.3	315.3	
A35W7	Cooling capacity	215	255	274	kW
	Power input	92,0	108	116	kW
	EER	2,34	2,36	2,36	W/W
	ESEER	3,69	3,71	3,71	W/W
	Water flow rate	10,4	12,3	13,2	l/s
	Pressure drops	46	51	45	kPa
A7W45	Heating capacity	240	285	302	kW
	Power input	79	94	100	kW
	COP	3,04	3,03	3,02	W/W
	Water flow rate	11,4	13,5	14,3	l/s
	Pressure drops	55	61	52	kPa

NET NOMINAL performances - Radiant plants

IR	Base setting up (AB)	245.3	280.3	315.3	
A35W18	Cooling capacity	299	353	381	kW
	Power input	94,3	112	119	kW
	EER	3,17	3,15	3,20	W/W
	Water flow rate	14,5	17,1	18,5	l/s
	Pressure drops	89	98	87	kPa
IP	Base setting up (AB)				
A35W18	Cooling capacity	288	341	368	kW
	Power input	91,9	109	116	kW
	EER	3,13	3,13	3,17	W/W
	Water flow rate	13,9	16,5	17,8	l/s
	Pressure drops	82	91	81	kPa
A7W35	Heating capacity	255	302	323	kW
	Power input	69,8	82,6	88,0	kW
	COP	3,65	3,66	3,67	W/W
	Water flow rate	12,0	14,3	15,3	l/s
	Pressure drops	61	68	60	kPa

Data declared according to **EN 14511**. The values are referred to units without options and accessories.
EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit
COP (Coefficient Of Performance) = ratio of the total heating capacity to the effective power input of the unit

ESEER (European Seasonal Energy Efficiency Ratio)
____ = Unit in **A CLASS.**
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

Acoustic performances

Base setting up (AB)	245.3	280.3	315.3	
Sound power level (E)	90	91	91	dB(A)
Sound pressure level at 1 meter	71	72	72	dB(A)
Sound pressure level at 5 meters	63	64	64	dB(A)
Sound pressure level at 10 meters	58	59	59	dB(A)
Low noise setting up (AS)	**245.3**	**280.3**	**315.3**	
Sound power level (E)	86	87	87	dB(A)
Sound pressure level at 1 meter	67	68	68	dB(A)
Sound pressure level at 5 meters	59	60	60	dB(A)
Sound pressure level at 10 meters	54	55	55	dB(A)
eXtra low noise setting up (AX)	**245.3**	**280.3**	**315.3**	
Sound power level (E)	84	85	85	dB(A)
Sound pressure level at 1 meter	65	66	66	dB(A)
Sound pressure level at 5 meters	57	58	58	dB(A)
Sound pressure level at 10 meters	52	53	53	dB(A)

(E): EUROVENT certified data
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 9614 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.

Technical data

Unit	245.3	280.3	315.3	
Power supply	400 - 3 - 50			V-ph-Hz
Compressor type	scroll			-
N° compressors / N° refrigerant circuits	3 / 1			n°
Plant side heat exchanger type	stainless steel brazed plates			-
Source side heat exchanger type	finned coil			-
Fans type	axial			-
N° fans	4	5		n°
Tank volume	460			l
Hydraulic fittings	3" VICTAULIC			-

Electrical data

Standard unit	245.3	280.3	315.3	
FLA - Full load current at maximum tolerated conditions	199	231	247	A
FLI - Full load power input at maximum tolerated conditions	121	137	148	kW
MIC - Maximum instantaneous current of the unit	425	428	470	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	311	313	351	A
Unit with high head modulating pump	**245.3**	**280.3**	**315.3**	
FLA - Full load current at maximum tolerated conditions	213	245	261	A
FLI - Full load power input at maximum tolerated conditions	130	146	157	kW
MIC - Maximum instantaneous current of the unit	439	442	483	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	324	327	364	A

Operative range

		Cooling		Heating		
Temperature	**Unit type**	**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 fans 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.

Desupeheater Version (VD) - NET NOMINAL performances

IR	Base setting up (AB)	245.3	280.3	315.3	
A35W7 - W45	Cooling capacity	244	288	311	kW
	Total power input	85,3	101,0	107,6	kW
	EER	2,86	2,85	2,89	W/W
	HRE	3,77	3,75	3,80	W/W
	Water flow rate	11,8	13,9	15,0	l/s
	Water pressure drop	59	65	57	kPa
	Heating recovery capacity	77,3	90,8	97,7	kW
	Water flow rate recovery	3,69	4,34	4,67	l/s
	Water pressure drop recovery	30	19	20	kPa
IP	**Base setting up (AB)**	**245.3**	**280.3**	**315.3**	
A35W7 - W45	Cooling capacity	235	278	300	kW
	Total power input	83,2	98,7	105,2	kW
	EER	2,82	2,82	2,85	W/W
	HRE	3,73	3,72	3,76	W/W
	Water flow rate	11,3	13,4	14,5	l/s
	Water pressure drop	54	60	54	kPa
	Heating recovery capacity	75,5	88,7	95,5	kW
	Water flow rate recovery	3,61	4,24	4,56	l/s
	Water pressure drop recovery	29	18	19	kPa

Total Recovery Version (VR) - NET NOMINAL performances

IR	Base setting up (AB)	245.3	280.3	315.3	
A35W7 - W45	Cooling capacity	246	291	314	kW
	Total power input	77,4	91,2	97,7	kW
	EER	3,19	3,19	3,21	W/W
	HRE	7,32	7,34	7,38	W/W
	Water flow rate	11,9	14,0	15,2	l/s
	Water pressure drop	60	66	59	kPa
	Heating recovery capacity	320	378	407	kW
	Water flow rate recovery	15,3	18,1	19,4	l/s
	Water pressure drop recovery	51	55	68	kPa

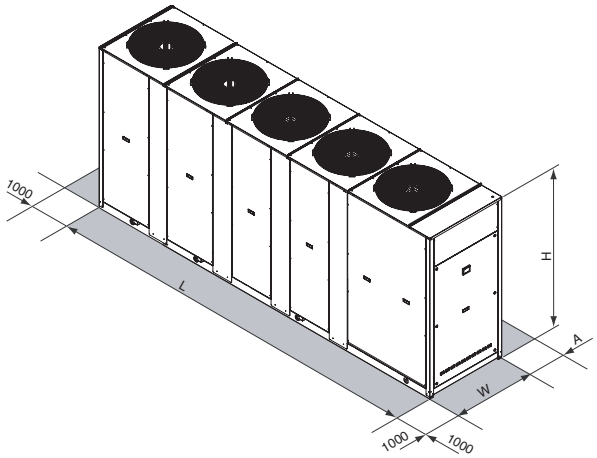
Data declared according to **EN 14511**. The values are referred to units without options and accessories.
EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit
HRE (Heat Recovery Efficiency) = ratio of the total capacity of the system (heating plus cooling capacity) to the effectice power input
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



	245.3	280.3	315.3	
L		5020		mm
W		1104		mm
H		2197		mm
A		2000		mm
Operating maximum weight*	2663	2744	2841	kg

* Weight refers to the unit IP with tank and pumping module 2 pumps.

> RLA

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 medium-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 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), 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

NET NOMINAL performances - Standard plants - EUROVENT certified data

IR	Base setting up (AB)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4	
A35W7	Cooling capacity	161	178	199	228	255	289	323	368	409	kW
	Power input	56,2	62,7	70,9	80,4	90,7	103	115	130	146	kW
	EER	**2,86**	**2,84**	**2,81**	**2,84**	**2,81**	**2,81**	**2,81**	**2,83**	**2,80**	**W/W**
	ESEER	**3,84**	**3,81**	**3,79**	**3,82**	**3,79**	**3,80**	**3,79**	**3,80**	**3,79**	**W/W**
	Water flow rate	7,74	8,55	9,60	11,0	12,3	14,0	15,6	17,7	19,7	l/s
	Pressure drops	51	51	58	57	60	64	54	58	58	kPa
IR	**Low noise setting up (AS)**	**160.4**	**180.4**	**200.4**	**230.4**	**260.4**	**290.4**	**330.4**	**375.4**	**420.4**	
A35W7	Cooling capacity	155	171	191	219	245	277	311	353	393	kW
	Power input	59,2	66,1	75,0	85,2	95,5	109	121	137	154	kW
	EER	**2,62**	**2,59**	**2,55**	**2,57**	**2,57**	**2,54**	**2,57**	**2,58**	**2,55**	**W/W**
	ESEER	**3,85**	**3,80**	**3,77**	**3,80**	**3,79**	**3,76**	**3,78**	**3,80**	**3,76**	**W/W**
	Water flow rate	7,45	8,22	9,22	10,6	11,8	13,4	15,0	17,0	18,9	l/s
	Pressure drops	47	47	53	53	56	58	50	53	54	kPa
IR	**eXtra low noise setting up (AX)**	**160.4**	**180.4**	**200.4**	**230.4**	**260.4**	**290.4**	**330.4**	**375.4**	**420.4**	
A35W7	Cooling capacity	151	167	187	214	240	272	304	346	385	kW
	Power input	59,8	66,9	76,0	86,4	96,6	111	123	138	157	kW
	EER	**2,53**	**2,50**	**2,46**	**2,48**	**2,48**	**2,45**	**2,47**	**2,51**	**2,45**	**W/W**
	ESEER	**3,90**	**3,85**	**3,82**	**3,84**	**3,86**	**3,82**	**3,82**	**3,88**	**3,81**	**W/W**
	Water flow rate	7,26	8,03	9,03	10,3	11,6	13,1	14,6	16,7	18,5	l/s
	Pressure drops	45	45	51	50	54	56	47	51	51	kPa
IP	**Base setting up (AB)**	**160.4**	**180.4**	**200.4**	**230.4**	**260.4**	**290.4**	**330.4**	**375.4**	**420.4**	
A35W7	Cooling capacity	154	171	192	215	244	275	310	357	397	kW
	Power input	55,4	61,8	69,6	78,5	89,9	102	113	129	144	kW
	EER	**2,78**	**2,77**	**2,76**	**2,74**	**2,71**	**2,70**	**2,74**	**2,77**	**2,76**	**W/W**
	ESEER	**3,72**	**3,70**	**3,72**	**3,68**	**3,65**	**3,65**	**3,66**	**3,72**	**3,73**	**W/W**
	Water flow rate	7,41	8,22	9,27	10,4	11,8	13,3	14,9	17,2	19,2	l/s
	Pressure drops	47	47	54	51	56	57	49	54	55	kPa
A7W45	Heating capacity	169	191	215	240	273	308	345	395	439	kW
	Power input	56,8	64,0	72,3	81,2	92,7	104	116	132	147	kW
	COP	**2,98**	**2,98**	**2,97**	**2,96**	**2,94**	**2,96**	**2,97**	**2,99**	**2,99**	**W/W**
	Water flow rate	8,03	9,03	10,2	11,4	12,9	14,6	16,3	18,7	20,8	l/s
	Pressure drops	55	57	65	62	66	69	59	64	65	kPa
IP	**Low noise setting up (AS)**	**160.4**	**180.4**	**200.4**	**230.4**	**260.4**	**290.4**	**330.4**	**375.4**	**420.4**	
A35W7	Cooling capacity	148	164	185	206	234	265	298	343	382	kW
	Power input	58,3	65,2	73,6	86,4	94,7	107	123	136	152	kW
	EER	**2,54**	**2,52**	**2,51**	**2,38**	**2,47**	**2,48**	**2,42**	**2,52**	**2,51**	**W/W**
	ESEER	**3,72**	**3,69**	**3,69**	**3,51**	**3,64**	**3,63**	**3,55**	**3,73**	**3,70**	**W/W**
	Water flow rate	7,12	7,88	8,89	9,94	11,3	12,8	14,3	16,5	18,4	l/s
	Pressure drops	43	44	49	47	51	53	45	50	51	kPa
A7W45	Heating capacity	162	183	206	230	262	296	331	379	422	kW
	Power input	53,5	60,3	68,2	76,6	87,3	99	110	125	140	kW
	COP	**3,03**	**3,03**	**3,02**	**3,00**	**3,00**	**2,99**	**3,01**	**3,03**	**3,01**	**W/W**
	Water flow rate	7,69	8,65	9,75	10,9	12,4	14,0	15,7	17,9	20,0	l/s
	Pressure drops	50	52	59	56	61	64	54	59	60	kPa
IP	**eXtra low noise setting up (AX)**	**160.4**	**180.4**	**200.4**	**230.4**	**260.4**	**290.4**	**330.4**	**375.4**	**420.4**	
A35W7	Cooling capacity	145	161	181	203	229	259	291	335	374	kW
	Power input	59,0	66,1	74,6	84,4	95,8	109	122	137	153	kW
	EER	**2,46**	**2,44**	**2,43**	**2,41**	**2,39**	**2,38**	**2,39**	**2,45**	**2,44**	**W/W**
	ESEER	**3,79**	**3,75**	**3,75**	**3,71**	**3,70**	**3,69**	**3,69**	**3,79**	**3,77**	**W/W**
	Water flow rate	6,98	7,74	8,70	9,75	11,0	12,5	14,0	16,1	18,0	l/s
	Pressure drops	42	42	47	45	48	51	43	48	49	kPa
A7W45	Heating capacity	161	181	204	228	259	293	328	374	417	kW
	Power input	51,8	58,5	66,2	74,5	84,6	95,6	106	121	135	kW
	COP	**3,11**	**3,09**	**3,08**	**3,06**	**3,06**	**3,06**	**3,09**	**3,09**	**3,09**	**W/W**
	Water flow rate	7,64	8,60	9,65	10,8	12,3	13,9	15,5	17,7	19,7	l/s
	Pressure drops	50	52	58	55	60	63	53	58	58	kPa

NET NOMINAL performances - Radiant plants

IR	Base setting up (AB)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4	
A35W18	Cooling capacity	205	226	253	290	324	368	411	468	521	kW
	Power input	60,5	67,5	76,7	87,0	98,0	112	124	140	158	kW
	EER	**3,39**	**3,35**	**3,30**	**3,33**	**3,31**	**3,29**	**3,31**	**3,34**	**3,30**	**W/W**
	Water flow rate	9,91	10,9	12,3	14,1	15,7	17,9	19,9	22,7	25,3	l/s
	Pressure drops	84	83	95	94	98	104	87	95	96	kPa
IP	**Base setting up (AB)**	**160.4**	**180.4**	**200.4**	**230.4**	**260.4**	**290.4**	**330.4**	**375.4**	**420.4**	
A35W18	Cooling capacity	196	217	245	274	310	351	394	454	506	kW
	Power input	59,4	66,4	75,1	84,6	96,8	110	122	139	154	kW
	EER	**3,30**	**3,27**	**3,26**	**3,24**	**3,20**	**3,19**	**3,23**	**3,27**	**3,29**	**W/W**
	Water flow rate	9,48	10,5	11,9	13,3	15,0	17,0	19,1	22,0	24,5	l/s
	Pressure drops	77	77	89	84	90	94	80	89	90	kPa
A7W35	Heating capacity	180	202	228	255	290	327	366	419	466	kW
	Power input	49,8	56,1	63,3	70,9	81,4	91,6	101	116	129	kW
	COP	**3,61**	**3,60**	**3,60**	**3,60**	**3,56**	**3,57**	**3,62**	**3,61**	**3,61**	**W/W**
	Water flow rate	8,51	9,57	10,8	12,1	13,7	15,4	17,3	19,8	22,0	l/s
	Pressure drops	62	64	73	69	75	77	66	72	73	kPa

Data declared according to **EN 14511**. The values are referred to units without options and accessories.
EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit
COP (Coefficient Of Performance) = ratio of the total heating capacity to the effective power input of the unit

ESEER (European Seasonal Energy Efficiency Ratio)
____ = Unit in **A CLASS.**
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

Acoustic performances

Base setting up (AB)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4	
Sound power level (E)	91	92	92	92	93	94	94	95	95	dB(A)
Sound pressure level at 1 meter	72	73	73	73	74	75	74	75	75	dB(A)
Sound pressure level at 5 meters	64	65	65	65	66	67	67	68	68	dB(A)
Sound pressure level at 10 meters	59	60	60	60	61	62	62	63	63	dB(A)
Low noise setting up (AS)	**160.4**	**180.4**	**200.4**	**230.4**	**260.4**	**290.4**	**330.4**	**375.4**	**420.4**	
Sound power level (E)	85	86	86	86	87	88	88	89	89	dB(A)
Sound pressure level at 1 meter	66	67	67	67	68	69	68	69	69	dB(A)
Sound pressure level at 5 meters	58	59	59	59	60	61	61	62	62	dB(A)
Sound pressure level at 10 meters	53	54	54	54	55	56	56	57	57	dB(A)
eXtra low noise setting up (AX)	**160.4**	**180.4**	**200.4**	**230.4**	**260.4**	**290.4**	**330.4**	**375.4**	**420.4**	
Sound power level (E)	82	83	83	83	84	85	85	86	86	dB(A)
Sound pressure level at 1 meter	63	64	64	64	65	66	65	66	66	dB(A)
Sound pressure level at 5 meters	55	56	56	56	57	58	58	59	59	dB(A)
Livello di pressione sonora a 10 metri	50	51	51	51	52	53	53	54	54	dB(A)

(E): EUROVENT certified data
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 9614 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.

Technical data

Unit	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4	
Power supply	400 - 3 - 50									V-ph-Hz
Compressor type	scroll									-
N° compressors / N° refrigerant circuits	4 / 2									n°
Plant side heat exchanger type	stainless steel brazed plates									-
Source side heat exchanger type	finned coil									-
Fans type	axial									-
N° fans	4				6			8		n°
Tank volume	325						710			l
Hydraulic fittings	3" VICTAULIC						4" VICTAULIC			-

Electrical data

Standard unit	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4	
FLA - Full load current at maximum tolerated conditions	140	151	177	193	217	243	269	314	335	A
FLI - Full load power input at maximum tolerated conditions	76	87	107	118	133	148	163	186	200	kW
MIC - Maximum instantaneous current of the unit	283	340	347	355	379	469	495	510	558	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	213	250	263	271	295	354	380	404	438	A
Unit with high head modulating pump	**160.4**	**180.4**	**200.4**	**230.4**	**260.4**	**290.4**	**330.4**	**375.4**	**420.4**	
FLA - Full load current at maximum tolerated conditions	149	160	187	203	227	256	282	327	357	A
FLI - Full load power input at maximum tolerated conditions	81	91	113	124	139	156	171	194	212	kW
MIC - Maximum instantaneous current of the unit	292	348	357	365	389	482	508	524	580	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	222	258	273	281	305	368	394	417	460	A

Operative range

		Cooling		Heating		
Temperature	**Unit type**	**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 fuction

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.

Desupeheater Version (VD) - NET NOMINAL performances

IR	Base setting up (AB)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4	
A35W7 - W45	Cooling capacity	167	185	207	237	264	300	336	382	425	kW
	Total power input	55,0	61,2	69,3	78,5	88,7	101	112	127	143	kW
	EER	3,04	3,01	2,99	3,02	2,98	2,97	3,00	3,01	2,98	W/W
	HRE	3,90	3,89	3,87	3,91	3,85	3,85	3,90	3,88	3,86	W/W
	Water flow rate	8,05	8,89	10,0	11,4	12,8	14,5	16,2	18,4	20,5	l/s
	Water pressure drop	55	55	63	62	65	68	58	62	63	kPa
	Heating recovery capacity	47,2	53,4	61,2	70,3	76,6	88,7	99,9	110,8	126,6	kW
	Water flow rate recovery	2,25	2,55	2,93	3,36	3,66	4,24	4,77	5,29	6,05	l/s
	Water pressure drop recovery	5	7	8	10	13	16	16	21	25	kPa
IP	Base setting up (AB)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4	
A35W7 - W45	Cooling capacity	160	177	200	224	253	286	322	371	413	kW
	Total power input	54,1	60,4	67,9	76,6	87,8	99	111	126	140	kW
	EER	2,96	2,94	2,94	2,92	2,89	2,88	2,91	2,95	2,96	W/W
	HRE	3,82	3,81	3,83	3,82	3,75	3,76	3,81	3,83	3,85	W/W
	Water flow rate	7,70	8,55	9,64	10,8	12,2	13,8	15,5	17,9	19,9	l/s
	Water pressure drop	51	51	58	55	59	62	53	59	59	kPa
	Heating recovery capacity	46,5	52,7	60,1	68,8	76,1	87,5	98,9	110	124	kW
	Water flow rate recovery	2,22	2,52	2,87	3,29	3,64	4,18	4,73	5,25	5,91	l/s
	Water pressure drop recovery	5	6	8	10	13	16	16	20	24	kPa

Total Recovery Version (VR) - NET NOMINAL performances

IR	Base setting up (AB)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4	
A35W7 - W45	Cooling capacity	169	186	209	239	267	303	339	386	429	kW
	Total power input	47,3	53,5	61,6	70,7	77,2	89,5	100	111	127	kW
	EER	3,56	3,48	3,39	3,38	3,46	3,39	3,38	3,46	3,37	W/W
	HRE	8,08	7,91	7,75	7,71	7,87	7,72	7,71	7,87	7,69	W/W
	Water flow rate	8,13	8,98	10,1	11,5	12,9	14,6	16,4	18,6	20,7	l/s
	Water pressure drop	56	57	64	63	66	69	59	64	64	kPa
	Heating recovery capacity	214	237	268	306	340	388	434	492	550	kW
	Water flow rate recovery	10,2	11,3	12,8	14,6	16,2	18,5	20,7	23,5	26,3	l/s
	Water pressure drop recovery	45	43	45	45	47	49	49	51	51	kPa

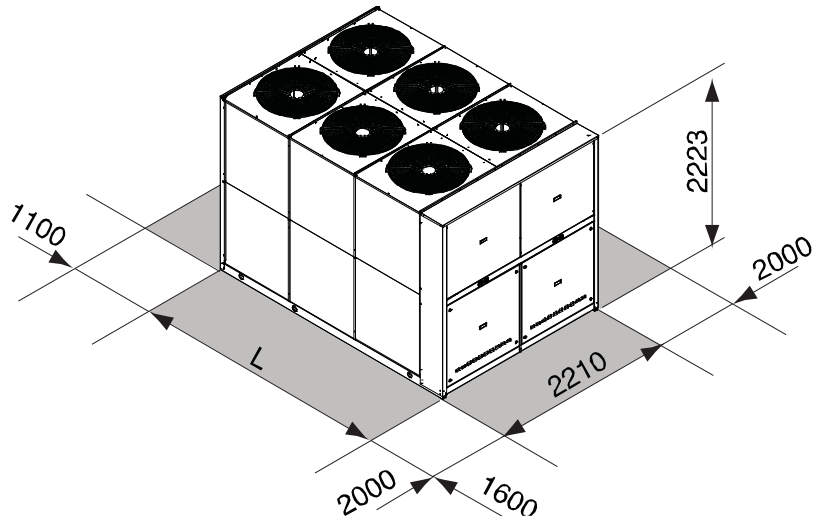
Data declared according to **EN 14511**. The values are referred to units without options and accessories.
EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit
HRE (Heat Recovery Efficiency) = ratio of the total capacity of the system (heating plus cooling capacity) to the effectice power input
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



	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	420.4	
L	3164	3164	3164	3164	3164	3164	4097	4097	4097	mm
Operating maximum weight*	2642	2752	2867	3008	3107	3178	3749	3864	3986	kg

* Weight refers to the unit IP with tank and pumping module 2 pumps.

> RLA HE

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 medium-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 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), 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

NET NOMINAL performances - Standard plants - EUROVENT certified data

IR	Base setting up (AB)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	
A35W7	Cooling capacity	172	191	212	237	267	304	340	387	kW
	Power input	52,7	58,0	65,4	74,1	83,6	95	106	122	kW
	EER	3,26	3,29	3,24	3,20	3,19	3,20	3,21	3,17	W/W
	ESEER	4,57	4,61	4,54	4,48	4,47	4,48	4,49	4,44	W/W
	Water flow rate	8,22	9,13	10,13	11,3	12,8	14,5	16,2	18,5	l/s
	Pressure drops	39	36	38	39	40	36	36	33	kPa
IR	Low noise setting up (AS)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	
A35W7	Cooling capacity	165	183	204	228	256	292	326	372	kW
	Power input	55,6	61,4	69,4	78,8	88,3	100,7	113	130	kW
	EER	2,97	2,98	2,94	2,89	2,90	2,90	2,89	2,86	W/W
	ESEER	4,57	4,59	4,53	4,46	4,46	4,47	4,45	4,41	W/W
	Water flow rate	7,88	8,74	9,75	10,9	12,2	14,0	15,6	17,8	l/s
	Pressure drops	36	33	35	36	36	33	34	31	kPa
IR	eXtra low noise setting up (AX)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	
A35W7	Cooling capacity	162	180	199	223	251	286	320	364	kW
	Power input	56,3	62,2	70,4	80,1	89,4	102	114	132	kW
	EER	2,88	2,89	2,83	2,78	2,81	2,80	2,82	2,77	W/W
	ESEER	4,66	4,69	4,58	4,51	4,55	4,53	4,56	4,48	W/W
	Water flow rate	7,74	8,60	9,51	10,7	12,0	13,7	15,3	17,4	l/s
	Pressure drops	34	32	33	35	35	32	32	29	kPa
IP	Base setting up (AB)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	
A35W7	Cooling capacity	169	187	208	234	266	301	339	385	kW
	Power input	52,7	58,0	65,3	73,3	83,2	94,0	106	121	kW
	EER	3,22	3,23	3,19	3,19	3,20	3,20	3,20	3,18	W/W
	ESEER	4,50	4,52	4,46	4,47	4,48	4,48	4,48	4,45	W/W
	Water flow rate	8,09	8,95	9,94	11,2	12,7	14,4	16,2	18,4	l/s
	Pressure drops	38	35	36	38	39	35	36	33	kPa
A7W45	Heating capacity	176	196	218	242	279	316	351	401	kW
	Power input	52,6	59,9	66,7	74,6	85,9	97	107	124	kW
	COP	3,34	3,28	3,27	3,24	3,25	3,26	3,28	3,23	W/W
	Water flow rate	8,39	9,37	10,4	11,6	13,3	15,1	16,8	19,2	l/s
	Pressure drops	41	38	40	41	43	39	39	36	kPa
IP	Low noise setting up (AS)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	
A35W7	Cooling capacity	163	180	200	225	255	289	325	370	kW
	Power input	55,6	61,4	69,2	77,9	87,9	99,6	113	129	kW
	EER	2,93	2,93	2,89	2,89	2,90	2,90	2,88	2,87	W/W
	ESEER	4,51	4,51	4,45	4,45	4,47	4,47	4,44	4,42	W/W
	Water flow rate	7,79	8,60	9,56	10,75	12,2	13,8	15,5	17,7	l/s
	Pressure drops	35	32	34	35	36	32	33	30	kPa
A7W45	Heating capacity	169	188	209	232	268	303	337	385	kW
	Power input	49,6	56,5	63,0	70,5	81,0	91,3	101	117	kW
	COP	3,41	3,33	3,32	3,29	3,31	3,32	3,35	3,29	W/W
	Water flow rate	8,07	8,98	9,99	11,1	12,8	14,5	16,1	18,4	l/s
	Pressure drops	37	35	37	37	40	36	36	33	kPa
IP	eXtra low noise setting up (AX)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	
A35W7	Cooling capacity	159	176	196	220	250	283	319	362	kW
	Power input	56,3	62,2	70,3	79,2	89,0	101	114	131	kW
	EER	2,82	2,83	2,79	2,78	2,81	2,80	2,81	2,77	W/W
	ESEER	4,58	4,58	4,52	4,50	4,55	4,54	4,55	4,49	W/W
	Water flow rate	7,60	8,41	9,36	10,51	11,9	13,5	15,2	17,3	l/s
	Pressure drops	33	31	32	34	34	31	32	29	kPa
A7W45	Heating capacity	167	186	207	230	265	300	333	381	kW
	Power input	48,0	54,8	61,1	68,5	78,4	89	98	113	kW
	COP	3,48	3,39	3,39	3,36	3,38	3,39	3,40	3,39	W/W
	Water flow rate	7,98	8,89	9,89	11,0	12,7	14,3	15,9	18,2	l/s
	Pressure drops	37	34	36	37	39	35	35	32	kPa

NET NOMINAL performances - Radiant plants

IR	Base setting up (AB)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	
A35W18	Cooling capacity	218	242	269	300	338	385	431	491	kW
	Power input	57,7	63,4	71,6	81,2	91,5	104	116	133	kW
	EER	3,78	3,82	3,76	3,69	3,69	3,70	3,72	3,69	W/W
	Water flow rate	10,52	11,7	13,0	14,5	16,3	18,6	20,8	23,7	l/s
	Pressure drops	64	60	62	64	64	59	60	54	kPa
IP	Base setting up (AB)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	
A35W18	Cooling capacity	215	238	264	297	337	382	430	489	kW
	Power input	57,5	63,3	71,3	80,2	91,0	103	116	132	kW
	EER	3,74	3,76	3,70	3,70	3,70	3,71	3,71	3,70	W/W
	Water flow rate	10,36	11,5	12,7	14,3	16,3	18,4	20,7	23,5	l/s
	Pressure drops	62	58	59	62	64	57	59	53	kPa
A7W35	Heating capacity	187	209	233	258	298	337	375	428	kW
	Power input	47,1	53,4	59,4	66,4	76,9	86,1	95	110	kW
	COP	3,97	3,91	3,92	3,89	3,88	3,91	3,95	3,89	W/W
	Water flow rate	8,89	9,93	11,0	12,3	14,1	16,0	17,8	20,3	l/s
	Pressure drops	45	43	45	46	48	43	44	40	kPa

Data declared according to **EN 14511**. The values are referred to units without options and accessories.
EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit
COP (Coefficient Of Performance) = ratio of the total heating capacity to the effective power input of the unit

ESEER (European Seasonal Energy Efficiency Ratio)
____ = Unit in **A CLASS.**
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

Acoustic performances

Base setting up (AB)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	
Sound power level (E)	91	92	92	92	93	94	94	95	dB(A)
Sound pressure level at 1 meter	72	73	73	73	74	75	74	75	dB(A)
Sound pressure level at 5 meters	64	65	65	65	66	67	67	68	dB(A)
Sound pressure level at 10 meters	59	60	60	60	61	62	62	63	dB(A)
Low noise setting up (AS)	**160.4**	**180.4**	**200.4**	**230.4**	**260.4**	**290.4**	**330.4**	**375.4**	
Sound power level (E)	85	86	86	86	87	88	88	89	dB(A)
Sound pressure level at 1 meter	66	67	67	67	68	69	68	69	dB(A)
Sound pressure level at 5 meters	58	59	59	59	60	61	61	62	dB(A)
Sound pressure level at 10 meters	53	54	54	54	55	56	56	57	dB(A)
eXtra low noise setting up (AX)	**160.4**	**180.4**	**200.4**	**230.4**	**260.4**	**290.4**	**330.4**	**375.4**	
Sound power level (E)	82	83	83	83	84	85	85	86	dB(A)
Sound pressure level at 1 meter	63	64	64	64	65	66	65	66	dB(A)
Sound pressure level at 5 meters	55	56	56	56	57	58	58	59	dB(A)
Livello di pressione sonora a 10 metri	50	51	51	51	52	53	53	54	dB(A)

(E): EUROVENT certified data
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 9614 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.

Technical data

Unit	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	
Power supply	400 - 3 - 50								V-ph-Hz
Compressor type	scroll								-
N° compressors / N° refrigerant circuits	4 / 2								n°
Plant side heat exchanger type	stainless steel brazed plates								-
Source side heat exchanger type	finned coil								-
Fans type	axial								-
N° fans	4				6			8	n°
Tank volume	325				710				l
Hydraulic fittings	3" VICTAULIC				4" VICTAULIC				-

Electrical data

Standard unit	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	
FLA - Full load current at maximum tolerated conditions	140	151	177	193	217	243	269	314	A
FLI - Full load power input at maximum tolerated conditions	76	87	107	118	133	148	163	186	kW
MIC - Maximum instantaneous current of the unit	283	340	347	355	379	469	495	510	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	213	250	263	271	295	354	380	404	A
Unit with high head modulating pump	**160.4**	**180.4**	**200.4**	**230.4**	**260.4**	**290.4**	**330.4**	**375.4**	
FLA - Full load current at maximum tolerated conditions	149	160	187	203	227	256	282	327	A
FLI - Full load power input at maximum tolerated conditions	81	91	113	124	139	156	171	194	kW
MIC - Maximum instantaneous current of the unit	292	348	357	365	389	482	508	524	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	222	258	273	281	305	368	394	417	A

Operative range

		Cooling		Heating		
Temperature	**Unit type**	**min**	**max**	**min**	**max**	
Outdoor air inlet temperature	IR, BR, IP, BP	-10*	55**	-15	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 fuction

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.

Desupeheater Version (VD) - NET NOMINAL performances

IR	Base setting up (AB)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	
A35W7 - W45	Cooling capacity	177	197	218	244	275	312	350	398	kW
	Total power input	53,1	58,5	66,1	74,7	84,5	96	106	123	kW
	EER	**3,33**	**3,36**	**3,30**	**3,27**	**3,25**	**3,24**	**3,29**	**3,22**	**W/W**
	HRE	**4,18**	**4,22**	**4,17**	**4,15**	**4,10**	**4,11**	**4,17**	**4,09**	**W/W**
	Water flow rate	8,55	9,49	10,5	11,8	13,3	15,1	16,9	19,2	l/s
	Water pressure drop	62	63	69	66	71	74	63	68	kPa
	Heating recovery capacity	45,0	50,3	57,6	66,2	72,0	83,4	94,0	107	kW
	Water flow rate recovery	2,15	2,40	2,75	3,16	3,44	3,98	4,49	5,11	l/s
	Water pressure drop recovery	5	6	8	10	12	16	20	26	kPa
IP	**Base setting up (AB)**	**160.4**	**180.4**	**200.4**	**230.4**	**260.4**	**290.4**	**330.4**	**375.4**	
A35W7 - W45	Cooling capacity	174	193	214	241	274	309	349	396	kW
	Total power input	53,0	58,4	65,9	73,8	84,1	95	106	122	kW
	EER	**3,29**	**3,31**	**3,25**	**3,26**	**3,25**	**3,25**	**3,28**	**3,23**	**W/W**
	HRE	**4,14**	**4,17**	**4,12**	**4,15**	**4,11**	**4,12**	**4,16**	**4,10**	**W/W**
	Water flow rate	8,42	9,31	10,34	11,6	13,2	15,0	16,8	19,1	l/s
	Water pressure drop	60	61	67	64	70	73	62	67	kPa
	Heating recovery capacity	45,0	50,3	57,5	65,4	71,6	82,3	94,0	106	kW
	Water flow rate recovery	2,15	2,40	2,75	3,12	3,42	3,93	4,49	5,06	l/s
	Water pressure drop recovery	5	6	8	10	12	16	20	26	kPa

Total Recovery Version (VR) - NET NOMINAL performances

IR	Base setting up (AB)	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	
A35W7 - W45	Cooling capacity	179	198	220	246	277	315	353	402	kW
	Total power input	45,5	50,8	58,4	66,9	73,1	84,8	95	108	kW
	EER	**3,93**	**3,91**	**3,77**	**3,68**	**3,79**	**3,72**	**3,72**	**3,72**	**W/W**
	HRE	**8,81**	**8,77**	**8,50**	**8,32**	**8,54**	**8,39**	**8,40**	**8,38**	**W/W**
	Water flow rate	8,63	9,58	10,6	11,9	13,4	15,3	17,1	19,4	l/s
	Water pressure drop	64	64	70	67	72	76	65	69	kPa
	Heating recovery capacity	222	247	276	310	347	396	444	505	kW
	Water flow rate recovery	10,6	11,8	13,2	14,8	16,6	18,9	21,2	24,1	l/s
	Water pressure drop recovery	49	47	48	47	49	51	51	53	kPa

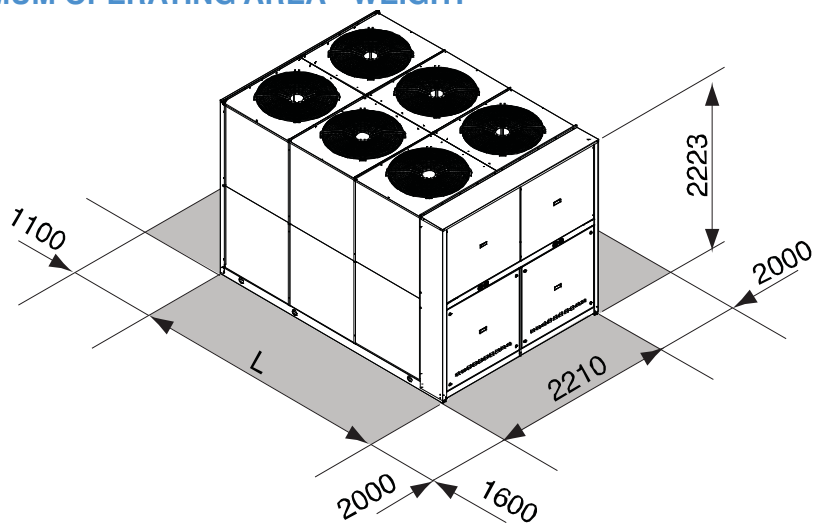
Data declared according to **EN 14511**. The values are referred to units without options and accessories.
EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit
HRE (Heat Recovery Efficiency) = ratio of the total capacity of the system (heating plus cooling capacity) to the effectice power input
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



	160.4	180.4	200.4	230.4	260.4	290.4	330.4	375.4	
L	3164	3164	3164	3164	3164	4097	4097	4097	mm
Operating maximum weight*	2441	2633	2829	3005	3069	3690	3790	3907	kg

* Weight refers to the unit IP with tank and pumping module 2 pumps.

> 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) standard for AS and AX unit

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

NET 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	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	W/W
	ESEER	3,90	3,90	3,93	3,90	3,94	3,91	W/W
	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
IR	Low noise setting up (AS)	350.5	390.6	440.6	490.6	560.6	630.6	
A35W7	Cooling capacity	335	356	418	470	532	595	kW
	Power input	129	140	162	185	207	233	kW
	EER	2,60	2,54	2,58	2,54	2,57	2,55	W/W
	ESEER	3,78	3,74	3,77	3,74	3,76	3,75	W/W
	Water flow rate	16,1	17,2	20,1	22,6	25,6	28,7	l/s
	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	328	349	410	460	522	583	kW
	Power input	133	144	166	190	211	239	kW
	EER	2,47	2,42	2,47	2,42	2,47	2,44	W/W
	ESEER	3,87	3,84	3,89	3,84	3,88	3,86	W/W
	Water flow rate	15,8	16,8	19,7	22,2	25,1	28,1	l/s
	Pressure drops	42	47	42	53	40	49	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	W/W
	ESEER	3,85	3,83	3,84	3,84	3,85	3,85	W/W
	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	W/W
	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
IP	Low noise setting up (AS)	350.5	390.6	440.6	490.6	560.6	630.6	
A35W7	Cooling capacity	325	346	406	457	515	579	kW
	Power input	128	138	161	183	204	231	kW
	EER	2,54	2,51	2,52	2,50	2,52	2,51	W/W
	ESEER	3,70	3,69	3,69	3,67	3,67	3,69	W/W
	Water flow rate	15,6	16,7	19,5	22,0	24,7	27,9	l/s
	Pressure drops	41	47	41	52	38	49	kPa
A7W45	Heating capacity	358	380	441	500	557	638	kW
	Power input	118	125	145	166	184	213	kW
	COP	3,03	3,04	3,04	3,01	3,03	3,00	W/W
	Water flow rate	17,0	18,0	20,9	23,7	26,4	30,2	l/s
	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	319	340	397	447	505	568	kW
	Power input	131	140	165	187	209	236	kW
	EER	2,44	2,43	2,41	2,39	2,42	2,41	W/W
	ESEER	3,83	3,81	3,79	3,79	3,79	3,79	W/W
	Water flow rate	15,3	16,3	19,1	21,5	24,3	27,3	l/s
	Pressure drops	39	45	39	50	37	47	kPa
A7W45	Heating capacity	355	376	436	495	551	631	kW
	Power input	116	123	142	163	180	209	kW
	COP	3,06	3,06	3,07	3,04	3,06	3,02	W/W
	Water flow rate	16,8	17,8	20,7	23,4	26,1	29,9	l/s
	Pressure drops	47	53	46	59	43	56	kPa

NET 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	W/W
	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	W/W
	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	W/W
	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.
EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit
COP (Coefficient Of Performance) = ratio of the total heating capacity to the effective power input of the unit

ESEER (European Seasonal Energy Efficiency Ratio)
____ = Unit in **A CLASS.**
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

Acoustic performances

Base setting up (AB)	350.5	390.6	440.6	490.6	560.6	630.6	
Sound power level (E)	95	95	96	96	97	97	dB(A)
Sound pressure level at 1 meter	75	75	76	76	76	76	dB(A)
Sound pressure level at 5 meters	67	67	68	68	69	69	dB(A)
Sound pressure level at 10 meters	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 (E)	89	89	90	90	91	91	dB(A)
Sound pressure level at 1 meter	69	69	70	70	70	70	dB(A)
Sound pressure level at 5 meters	61	61	62	62	63	63	dB(A)
Sound pressure level at 10 meters	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 (E)	86	86	87	87	88	88	dB(A)
Sound pressure level at 1 meter	66	66	67	67	67	67	dB(A)
Sound pressure level at 5 meters	58	58	59	59	60	60	dB(A)
Sound pressure level at 10 meters	54	54	55	55	56	56	dB(A)

(E): EUROVENT certified data
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 9614 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.

Technical data

Unit	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						-

Electrical data

Standard unit	350.5	390.6	440.6	490.6	560.6	630.6	
FLA - Full load current at maximum tolerated conditions	287	302	355	399	451	494	A
FLI - Full load power input at maximum tolerated conditions	171	182	211	237	272	304	kW
MIC - Maximum instantaneous current of the unit	538	529	605	649	771	815	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	434	441	508	552	640	684	A
Unit with high head modulating pump	**350.5**	**390.6**	**440.6**	**490.6**	**560.6**	**630.6**	
FLA - Full load current at maximum tolerated conditions	308	323	382	426	478	521	A
FLI - Full load power input at maximum tolerated conditions	184	195	227	253	288	320	kW
MIC - Maximum instantaneous current of the unit	558	550	632	676	798	842	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	558	550	632	676	798	842	A

Operative range

		Cooling		Heating		
Temperature	**Unit type**	**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 fuction

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.

Desupeheater Version (VD) - NET NOMINAL performances

IR	Base setting up (AB)	350.5	390.6	440.6	490.6	560.6	630.6	
A35W7 - W45	Cooling capacity	362	385	453	509	576	644	kW
	Total power input	120	129	150	170	189	213	kW
	EER	3,02	3	3,03	2,99	3,06	3,02	W/W
	HRE	3,75	3,72	3,76	3,71	3,79	3,75	W/W
	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	352	376	440	494	558	626	kW
	Total power input	118	126	147	168	187	211	kW
	EER	2,99	2,97	2,98	2,94	2,98	2,97	W/W
	HRE	3,72	3,69	3,7	3,66	3,71	3,69	W/W
	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) - NET NOMINAL performances

IR	Base setting up (AB)	350.5	390.6	440.6	490.6	560.6	630.6	
A35W7 - W45	Cooling capacity	362	385	453	509	576	644	kW
	Total power input	104	113	130	150	166	190	kW
	EER	3,48	3,42	3,49	3,38	3,48	3,38	W/W
	HRE	7,92	7,8	7,94	7,72	7,92	7,72	W/W
	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	23,6	27,6	31,2	35,1	39,4	l/s
	Water pressure drop recovery	52	60	51	66	54	68	kPa

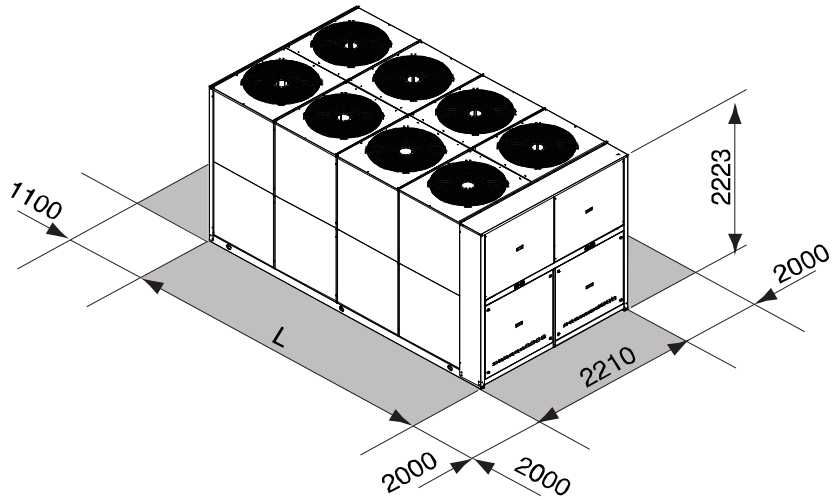
Data declared according to **EN 14511**. The values are referred to units without options and accessories.
EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit
HRE (Heat Recovery Efficiency) = ratio of the total capacity of the system (heating plus cooling capacity) to the effectice power input
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

* Weight refers to the unit IP with tank and pumping module 2 pumps.

> RHA HE

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) standard for AS and AX unit

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

NET NOMINAL performances - Standard plants - EUROVENT certified data

IR	Base setting up (AB)	350.5	390.6	440.6	490.6	
A35W7	Cooling capacity	371	398	457	512	kW
	Power input	118	127	146	163	kW
	EER	3,14	3,13	3,13	3,14	W/W
	ESEER	4,27	4,29	4,25	4,29	W/W
	Water flow rate	17,8	19,1	21,9	24,6	l/s
	Pressure drops	33	38	29	37	kPa
IR	Low noise setting up (AS)	350.5	390.6	440.6	490.6	
A35W7	Cooling capacity	356	382	439	491	kW
	Power input	125	134	154	172	kW
	EER	2,85	2,85	2,85	2,85	W/W
	ESEER	4,15	4,15	4,13	4,16	W/W
	Water flow rate	17,1	18,3	21,1	23,6	l/s
	Pressure drops	31	35	27	34	kPa
IR	eXtra low noise setting up (AX)	350.5	390.6	440.6	490.6	
A35W7	Cooling capacity	349	374	429	482	kW
	Power input	126	136	156	175	kW
	EER	2,77	2,75	2,75	2,75	W/W
	ESEER	4,33	4,33	4,29	4,31	W/W
	Water flow rate	16,8	18,0	20,6	23,1	l/s
	Pressure drops	30	34	26	32	kPa
IP	Base setting up (AB)	350.5	390.6	440.6	490.6	
A35W7	Cooling capacity	365	392	448	497	kW
	Power input	117	126	144	160	kW
	EER	3,12	3,11	3,11	3,11	W/W
	ESEER	4,24	4,26	4,23	4,25	W/W
	Water flow rate	17,5	18,8	21,5	23,9	l/s
	Pressure drops	32	37	28	35	kPa
A7W45	Heating capacity	387	417	475	534	kW
	Power input	120	129	147	165	kW
	COP	3,23	3,23	3,23	3,24	W/W
	Water flow rate	18,4	19,8	22,6	25,4	l/s
	Pressure drops	36	41	31	39	kPa
IP	Low noise setting up (AS)	350.5	390.6	440.6	490.6	
A35W7	Cooling capacity	350	376	430	478	kW
	Power input	124	133	152	169	kW
	EER	2,82	2,83	2,83	2,83	W/W
	ESEER	4,12	4,12	4,10	4,12	W/W
	Water flow rate	16,8	18,1	20,6	22,9	l/s
	Pressure drops	30	34	26	32	kPa
A7W45	Heating capacity	372	399	456	513	kW
	Power input	113	121	139	156	kW
	COP	3,29	3,30	3,28	3,29	W/W
	Water flow rate	17,7	19,0	21,7	24,4	l/s
	Pressure drops	33	38	28	36	kPa
IP	eXtra low noise setting up (AX)	350.5	390.6	440.6	490.6	
A35W7	Cooling capacity	343	368	421	468	kW
	Power input	125	134	154	171	kW
	EER	2,74	2,74	2,73	2,74	W/W
	ESEER	4,29	4,29	4,26	4,29	W/W
	Water flow rate	16,5	17,7	20,2	22,5	l/s
	Pressure drops	29	33	25	31	kPa
A7W45	Heating capacity	368	395	451	507	kW
	Power input	109	118	134	151	kW
	COP	3,38	3,35	3,37	3,36	W/W
	Water flow rate	17,5	18,8	21,5	24,1	l/s
	Pressure drops	32	37	28	35	kPa

NET NOMINAL performances - Radiant plants

IR	Base setting up (AB)	350.5	390.6	440.6	490.6	560.6	630.6	
A35W18	Cooling capacity	473	507	583	653	746	833	kW
	Power input	127	136	156	175	200	222	kW
	EER	3,72	3,73	3,74	3,73	3,73	3,75	W/W
	Water flow rate	22,8	24,5	28,1	31,5	36,0	40,4	l/s
	Pressure drops	55	63	48	60	70	86	kPa
IP	Base setting up (AB)	350.5	390.6	440.6	490.6	560.6	630.6	
A35W18	Cooling capacity	466	499	572	634	731	816	kW
	Power input	125	135	154	171	197	220	kW
	EER	3,73	3,70	3,71	3,71	3,71	3,71	W/W
	Water flow rate	22,4	24,1	27,5	30,6	35,3	39,5	l/s
	Pressure drops	53	61	46	57	67	83	kPa
A7W35	Heating capacity	377	400	464	526	587	672	kW
	Power input	102	109	125	143	160	185	kW
	COP	3,70	3,67	3,71	3,68	3,67	3,63	W/W
	Water flow rate	17,9	19,0	22,1	25,0	27,9	31,8	l/s
	Pressure drops	34	38	29	38	42	54	kPa

Data declared according to **EN 14511**. The values are referred to units without options and accessories.
EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit
COP (Coefficient Of Performance) = ratio of the total heating capacity to the effective power input of the unit

ESEER (European Seasonal Energy Efficiency Ratio)
____ = Unit in **A CLASS.**
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

Acoustic performances

Base setting up (AB)	350.5	390.6	440.6	490.6	
Sound power level (E)	95	95	96	96	dB(A)
Sound pressure level at 1 meter	75	75	76	76	dB(A)
Sound pressure level at 5 meters	67	67	68	68	dB(A)
Sound pressure level at 10 meters	63	63	64	64	dB(A)
Low noise setting up (AS)	**350.5**	**390.6**	**440.6**	**490.6**	
Sound power level (E)	89	89	90	90	dB(A)
Sound pressure level at 1 meter	69	69	70	70	dB(A)
Sound pressure level at 5 meters	61	61	62	62	dB(A)
Sound pressure level at 10 meters	57	57	58	58	dB(A)
eXtra low noise setting up (AX)	**350.5**	**390.6**	**440.6**	**490.6**	
Sound power level (E)	86	86	87	87	dB(A)
Sound pressure level at 1 meter	66	66	67	67	dB(A)
Sound pressure level at 5 meters	58	58	59	59	dB(A)
Sound pressure level at 10 meters	54	54	55	55	dB(A)

(E): EUROVENT certified data
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 9614 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.

Technical data

Unit	350.5	390.6	440.6	490.6	
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		n°
Tank volume	700				l
Hydraulic fittings	4" VICTAULIC				-

Electrical data

Standard unit	350.5	390.6	440.6	490.6	
FLA - Full load current at maximum tolerated conditions	171	182	211	237	A
FLI - Full load power input at maximum tolerated conditions	287	302	355	399	kW
MIC - Maximum instantaneous current of the unit	538	529	605	649	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	414	421	481	525	A
Unit with high head modulating pump	**350.5**	**390.6**	**440.6**	**490.6**	
FLA - Full load current at maximum tolerated conditions	184	195	227	253	A
FLI - Full load power input at maximum tolerated conditions	308	323	382	426	kW
MIC - Maximum instantaneous current of the unit	558	550	632	676	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	434	441	508	552	A

Operative range

		Cooling		Heating		
Temperature	**Unit type**	**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 fuction

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.

Desupeheater Version (VD) - NET NOMINAL performances

IR	Base setting up (AB)	350.5	390.6	440.6	490.6	
A35W7 - W45	Cooling capacity	386	413	475	532	kW
	Total power input	115,6	123,8	142,6	159,1	kW
	EER	3,34	3,34	3,33	3,34	W/W
	HRE	4,21	4,22	4,21	4,23	W/W
	Water flow rate	18,5	19,9	22,8	25,6	l/s
	Water pressure drop	36	41	31	40	kPa
	Heating recovery capacity	101	109	125	140	kW
	Water flow rate recovery	4,82	5,20	5,96	6,71	l/s
	Water pressure drop recovery	24	27	25	32	kPa
IP	**Base setting up (AB)**	**350.5**	**390.6**	**440.6**	**490.6**	
A35W7 - W45	Cooling capacity	380	407	466	517	kW
	Total power input	114,5	122,7	140,5	155,9	kW
	EER	3,32	3,32	3,31	3,32	W/W
	HRE	4,12	4,12	4,11	4,12	W/W
	Water flow rate	18,2	19,6	22,4	24,8	l/s
	Water pressure drop	35	40	30	37	kPa
	Heating recovery capacity	92	98	112	125	kW
	Water flow rate recovery	4,38	4,70	5,35	5,97	l/s
	Water pressure drop recovery	20	22	20	25	kPa

Total Recovery Version (VR) - NET NOMINAL performances

IR	Base setting up (AB)	350.5	390.6	440.6	490.6	
A35W7 - W45	Cooling capacity	386	413	475	532	kW
	Total power input	100	108	123	140	kW
	EER	3,85	3,81	3,85	3,81	W/W
	HRE	8,65	8,58	8,65	8,57	W/W
	Water flow rate	18,50	19,9	22,8	25,6	l/s
	Water pressure drop	36	41	31	40	kPa
	Heating recovery capacity	481	516	592	665	kW
	Water flow rate recovery	23,0	24,7	28,3	31,8	l/s
	Water pressure drop recovery	52	59	48	61	kPa

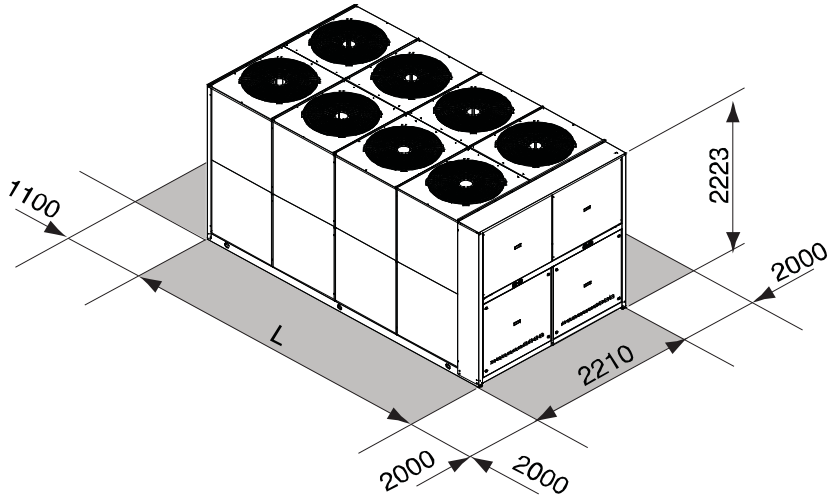
Data declared according to **EN 14511**. The values are referred to units without options and accessories.
EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit
HRE (Heat Recovery Efficiency) = ratio of the total capacity of the system (heating plus cooling capacity) to the effectice power input
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	
L	5030	5030	5030	5030	mm
Operating maximum weight*	4900	5110	5220	5300	kg

* Weight refers to the unit IP with tank and pumping module 2 pumps.

> RHV
AIR COOLED WATER CHILLERS

Units Series

Type
IR chiller
BR chiller brine

Available version
VB Basic
VD and VR on request

Available configuration
AB Basic
AS Low noise

VB unit specifications

The RHV units are air-cooled water chillers using R407C ecological gas.
When developing the unit, special attention was paid to the issue of noise, in order to comply with increasingly strict laws on noise pollution. In fact, two noise attenuation levels are available (Basic, Low noise).
The range is completed with numerous accessories and options, including the possibility of having units equipped with pumping modules with 2 pumps 2 poles (for Basic Version) and 4 poles (for low noise Version).
The units are carefully built and tested, therefore installation only requires the electrical and hydraulic

Basic Version (VB) and Basic Configuration (AB)

- COMPRESSOR: 2 TWIN-SCREW semihermetic compressors able to modulate the COOLING capacity from 12,5 to 100%, mounted on rubber vibration dampers.
- REFRIGERANT CIRCUIT: 2 independent refrigerant circuits, complete with maximum and minimum pressure switches, PED safety valves, dehydrator filter, liquid/humidity indicator, compressor delivery and liquid shut-off valves, high and low pressure transducers electronic expansion valve which optimises the unit efficiency.
- PLANT SIDE HEAT EXCHANGER: shell and tube evaporator, fitted inside a shell of thermal insulation material to prevent condensation and heat exchange with the outside, protected to a minimum air temperature of -10°C by means of a water differential pressure switch and an antifreeze heater.
- SOURCE SIDE HEAT EXCHANGER: finned coils with large heat exchange surface, made with copper pipes and notched aluminium fins,
- FANS: helical fans with crescent-shaped blades to limit noise
- ELECTRICAL PANEL: control electrical panel with a main door lock disconnecting switch, sequence meter, microprocessor controller with display (4 lines of 20 characters) containing the electrical equipment and all the components with minimum protection rating IP54.

Basic Version (VB) and Low noise Configuration (AS)

In addition to the specification in Basic version (AB), the Low Noise version (AS) provides for the following configurations:

- FANS: reduced speed
- COMPRESSORS: positioned inside a soundproofed cabin, made with profiles and panels insulated with optimum sound-absorbing material.

Main accessories/Options

Integrated Pumping Modules with 2 pumps, supplied in 4 different configurations:
• Pumps 2 poles standard head
• Pumps 2 poles high head
• Pumps 2 poles extra high head
• Pumps 4 poles standard head
Condensation Control Device (standard for AS), enables unit operation to outside air temperatures =-10°C
Unit external Storage and Pumping Module complete with insulated tank, single or twin pump and all hydronic components.
Remote Control,
Compressor Soft-starter,
Compressor retiming condensers,
Compressor and fan thermal magnet switches

USER INTERFACING

The controller on the unit is designed to ensure energy-saving and efficiency.
It enables the setting of:
- Double Set Point
- Demand Limit
- Noise control
- Heating in integration
- ATC function to protect in high ambient air conditions
- Function climate control evolved (temperature scrolling)

Common Data		360.2	410.2	460.2	520.2	580.2	630.2	680.2	780.2	900.2	1000.2	1150.2	1300.2	1450.2	
Supply		400 V – 3 ph – 50Hz													V-ph-Hz
Quantity-type compressor. N° circ-Part load		2 - TWIN SCREW - 2 - 13/100%													-
Quantity type evaporator		1 - SHELL & TUBE													-
Water content evaporator		106	103	153	148	262	262	262	248	241	413	398	405	543	l
Water connection IN/OUT		4" DN100		5" DN125		6" DN150					8" DN200				DN
Quantity fan	AB - AS	8	8	8	8	10	10	10	12	14	14	16	20	24	n°
Fan speed	AB - AS	900	900	900	900	900	900	900	900	900	900	900	900	900	rpm
Operation weight	AB	3570	3580	3992	4328	4894	5089	5284	5826	6823	7928	8260	9216	9922	kg
	AS	3769	3779	4206	4557	5123	5318	5513	6055	7087	8192	8524	9480	10186	kg
F.L.A. Full load ampere		298	336	371	406	458	492	526	534	702	792	878	978	994	A

Basic Configuration (AB)

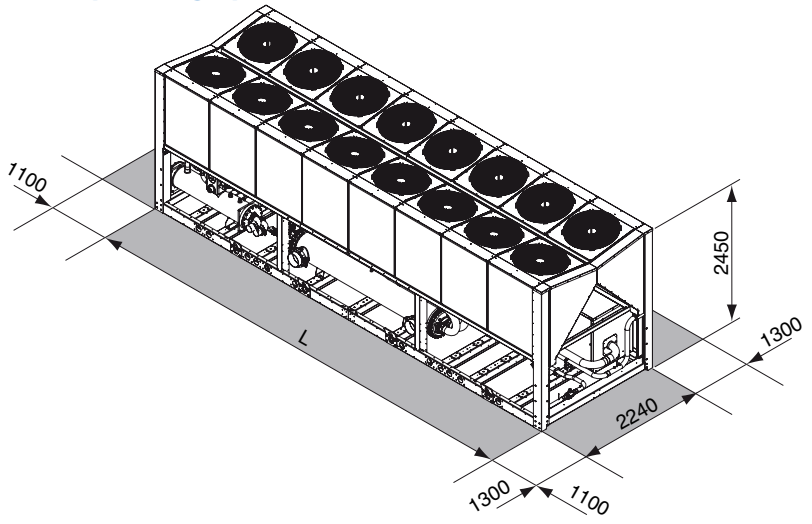
_	360.2	410.2	460.2	520.2	580.2	630.2	680.2	780.2	900.2	1000.2	1150.2	1300.2	1450.2	
Cooling capacity	364	410	452	511	576	621	672	771	882	995	1149	1308	1430	kW
Total power input	145	168	186	205	228	247	261	293	340	391	446	509	494	kW
EER	**2,51**	**2,44**	**2,43**	**2,49**	**2,53**	**2,51**	**2,57**	**2,63**	**2,60**	**2,55**	**2,57**	**2,57**	**2,90**	-
ESEER	**3,28**	**3,21**	**3,20**	**3,30**	**3,35**	**3,33**	**3,41**	**3,53**	**3,46**	**3,40**	**3,46**	**3,47**	**3,95**	-
Water flow rate	17,4	19,6	21,6	24,4	27,5	29,7	32,1	36,8	42,1	47,5	54,9	62,5	68,3	l/s
Water pressure drop	54	50	44	50	39	45	53	43	55	57	46	56	46	kPa
Available static head	-	-	-	-	-	-	-	-	-	-	-	-	-	
Sound level	**360.2**	**410.2**	**460.2**	**520.2**	**580.2**	**630.2**	**680.2**	**780.2**	**900.2**	**1000.2**	**1150.2**	**1300.2**	**1450.2**	
Totale - SWL	99	99	99	100	100	100	100	101	102	102	103	104	105	dB(A)
SPL 1 m	79	79	79	80	80	80	80	80	81	81	82	82	82	dB(A)
SPL 5 m	71	71	71	72	72	72	72	73	74	74	75	75	76	dB(A)
SPL 10 m	67	67	67	68	68	68	68	69	70	69	70	71	72	dB(A)

Low noise Configuration (AS)

_	360.2	410.2	460.2	520.2	580.2	630.2	680.2	780.2	900.2	1000.2	1150.2	1300.2	1450.2	
Cooling capacity	350	396	435	494	555	601	650	743	853	963	1104	1260	1384	kW
Total power input	146	169	188	207	230	249	263	295	342	394	453	515	494	kW
EER	**2,41**	**2,34**	**2,32**	**2,38**	**2,41**	**2,42**	**2,47**	**2,52**	**2,50**	**2,45**	**2,44**	**2,45**	**2,80**	-
ESEER	**3,15**	**3,08**	**3,06**	**3,16**	**3,20**	**3,20**	**3,27**	**3,37**	**3,33**	**3,26**	**3,28**	**3,30**	**3,82**	-
Water flow rate	16,7	18,9	20,8	23,6	26,5	28,7	31,0	35,5	40,7	46,0	52,8	60,2	66,1	l/s
Water pressure drop	50	47	41	47	36	42	50	40	51	53	42	52	43	kPa
Available static head	-	-	-	-	-	-	-	-	-	-	-	-	-	
Sound level	**360.2**	**410.2**	**460.2**	**520.2**	**580.2**	**630.2**	**680.2**	**780.2**	**900.2**	**1000.2**	**1150.2**	**1300.2**	**1450.2**	
Totale - SWL	94	94	94	95	95	95	95	96	97	97	98	99	100	dB(A)
SPL 1 m	74	74	74	75	75	75	75	75	76	76	77	77	77	dB(A)
SPL 5 m	66	66	66	67	67	67	67	68	69	69	70	70	71	dB(A)
SPL 10 m	62	62	62	63	63	63	63	64	64	64	65	66	67	dB(A)

NOTES:
Cooling performance values measured with EWT/LWT 12/7°C - AT 35°C D.B.
ESEER : European seasonal efficiency rating in cooling.
SWL Sound power levels, with reference to $1x10^{-12}$ W in dB(A) measured in compliance with ISO 9614 standards, is certified according to the Eurovent certification program. Eurovent certification (E) exclusively refers to the Total Sound Power in db(A), which is therefore the only binding acoustic specification.
SPL Sound pressure levels, with reference to $2x10^{-5}$ Pa calculated by applying the ISO-3744 relation (Eurovent 8/1) and refer to a distance of 1/5/10 meter away from the external surface of units operating in standard condition (ambient air T=35°C, water 12/7°C) in cooling mode, in open field with directivity factor 2.

Dimensions and minimun operating space



	360.2	410.2	460.2	520.2	580.2	630.2	680.2	780.2	900.2	1000.2	1150.2	1300.2	1450.2	
L	4070	4070	4070	4070	5000	5000	5000	5950	6900	6900	7850	10000	11900	mm

> RHV

AIR WATER CHILLER
FOR OUTDOOR INSTALLATION

Available range

Unit type
- IR Chiller
- BR Chiller Brine

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 range of air-water chillers are designed to meet the climate control and air conditioning needs of large capacity systems in the industrial and commercial sectors. Suitable for outdoor installation, as standard the units are equipped with 2 TWIN-SCREW semihermetic compressors mounted on rubber vibration dampers, able to modulate the capacity of the unit from minimum 12.5 (not for all configurations) to 100%, plant side exchanger shell and tube type complete with Victaulic water connections, fitted inside a shell of thermal insulation material to prevent condensation and heat exchange with the outside, optimised for R134a with high efficiency grooved tubes, protected by means of a water differential pressure switch and from the winter freeze to a minimum air temperature of -10°C by means of an antifreeze heater, source side exchanger finned coils with large heat exchange surface, made with copper pipes and louvered aluminium fins, 2 independent refrigerant circuits, complete with electronic expansion valve which optimises unit efficiency at full and partial loads and enables maximum seasonal efficiency, maximum and minimum pressure switch, PED safety valves, dehydrator filter, liquid/moisture indicator, compressor discharge and liquid shut-off valves, high and low pressure transducers, electrical panel with minimum protection IP54 containing the electrical equipment and all the components to control and command the unit complete with main supply breaker with door lock function, phase sequence control device, microprocessor controller with display (4 lines of 20 characters). In addition to the standard features the Low noise setting up (AS) is equipped with fans reduced speed and compressors positioned inside a soundproofed cabin, made with profiles and panels insulated with acoustic material. in addition to the standard features the eXtra low noise setting up (AX) is equipped with coils with larger surface in order to further reduce the fans speed and compressors positioned inside a soundproofed cabin, made with profiles and panels insulated with superior acoustic material. The range is completed with numerous accessories and options, including the possibility of having units equipped with pumping modules with 2 pumps, 2 poles for Basic Version and 4 poles for Low Noise and Extra Low Noise setting up. The units are carefully built and tested, therefore installation only requires the electrical and hydraulic connections.

Options

Compressor starting
- standard (contactors)
- soft starter

Compressors power factor correction

Electrical load protection
- standard (fuses)
- thermal magnetic circuit breakers

Accessories

Integrated Pumping Modules with 2 pumps, supplied in 4 different configurations:
- Pumps 2 poles standard head
- Pumps 2 poles high head
- Pumps 2 poles extra high head
- Pumps 4 poles standard head

Condensation Control Device (standard for AS and AX), enables unit operation to outside air temperatures =-10°C)

Spring vibration dampers

Coil protection grilles

Antintrusion protection grilles

External Water Storage Tank and Pumping Module complete with insulated carbon steel tank, single or twin pump and all hydronic components.

Antifreeze electrical heaters for Storage tank

Remote controller

Serial Interface Modbus on RS 485

Programmer clock

Phase sequence and voltage controller

High and low pressure gauges

Compressor suction shut-off valve

Water flow switch

NET NOMINAL performances - Standard plants - EUROVENT certified data

IR	Base setting up (AB)	330.2	370.2	420.2	470.2	510.2	590.2	670.2	740.2	800.2	900.2	1000.2	1150.2	
A35W7	Cooling capacity	329	363	412	464	507	589	660	738	795	883	980	1104	kW
	Power input	122	139	154	169	192	215	230	265	288	332	359	389	kW
	EER	2,71	2,6	2,68	2,74	2,63	2,74	2,88	2,78	2,77	2,66	2,73	2,84	W/W
	ESEER	3,34	3,23	3,33	3,44	3,31	3,46	3,54	3,51	3,51	3,42	3,48	3,69	W/W
	Water flow rate	15,9	17,5	19,8	22,4	24,4	28,4	31,8	35,5	38,3	42,6	47,2	53,2	l/s
	Pressure drops	49	57	44	56	53	53	44	45	52	60	42	56	kPa
IR	**Low noise setting up (AS)**	**330.2**	**370.2**	**420.2**	**470.2**	**510.2**	**590.2**	**670.2**	**740.2**	**800.2**	**900.2**	**1000.2**	**1150.2**	
A35W7	Cooling capacity	319	351	396	443	490	563	638	710	763	849	937	1071	kW
	Power input	120	139	154	171	191	219	239	270	296	334	367	400	kW
	EER	2,65	2,52	2,58	2,6	2,57	2,57	2,67	2,63	2,58	2,54	2,55	2,68	W/W
	ESEER	3,45	3,29	3,32	3,38	3,32	3,31	3,44	3,39	3,35	3,32	3,31	3,55	W/W
	Water flow rate	15,3	16,9	19,1	21,4	23,6	27,1	30,7	34,2	36,7	40,9	45,1	51,6	l/s
	Pressure drops	46	54	40	51	50	48	41	41	47	55	39	53	kPa
IR	**eXtra low noise setting up (AX)**	**330.2**	**370.2**	**420.2**	**470.2**	**510.2**	**590.2**	**670.2**	**740.2**	**800.2**	**900.2**	**1000.2**	**1150.2**	
A35W7	Cooling capacity	305	348	389	432	486	547	632	695	748	857	937	1067	kW
	Power input	125	141	157	176	194	230	249	277	304	337	374	412	kW
	EER	2,44	2,47	2,47	2,45	2,51	2,38	2,54	2,5	2,47	2,55	2,51	2,59	W/W
	ESEER	3,22	3,29	3,22	3,2	3,28	3,1	3,32	3,28	3,24	3,39	3,3	3,48	W/W
	Water flow rate	14,7	16,8	18,7	20,8	23,4	26,3	30,4	33,4	36	41,3	45,1	51,4	l/s
	Pressure drops	42	53	39	48	49	46	40	40	46	56	39	52	kPa

Data declared according to **EN 14511**. The values are referred to units without options and accessories.
EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit
ESEER (European Seasonal Energy Efficiency Ratio)
____ = Unit in **A CLASS.**
A35W7 = source : air in 35°C d.b. / plant : water in 12°C out 7°C

Acoustic performances

Base setting up (AB)	330.2	370.2	420.2	470.2	510.2	590.2	670.2	740.2	800.2	900.2	1000.2	1150.2	
Sound power level (E)	98	98	98	98	100	100	100	101	101	102	102	103	dB(A)
Sound pressure level at 1 meter	79	79	79	79	80	80	80	80	80	81	81	82	dB(A)
Sound pressure level at 5 meters	71	71	71	71	72	72	72	73	73	74	73	74	dB(A)
Sound pressure level at 10 meters	66	66	66	66	67	67	67	69	69	69	69	70	dB(A)
Low noise setting up (AS)	**330.2**	**370.2**	**420.2**	**470.2**	**510.2**	**590.2**	**670.2**	**740.2**	**800.2**	**900.2**	**1000.2**	**1150.2**	
Sound power level (E)	93	93	93	93	94	94	94	96	96	97	97	98	dB(A)
Sound pressure level at 1 meter	73	73	73	73	74	74	74	75	75	75	75	76	dB(A)
Sound pressure level at 5 meters	65	65	65	65	67	66	66	67	67	68	68	69	dB(A)
Sound pressure level at 10 meters	61	61	61	61	62	62	62	63	63	64	64	65	dB(A)
eXtra low noise setting up (AX)	**330.2**	**370.2**	**420.2**	**470.2**	**510.2**	**590.2**	**670.2**	**740.2**	**800.2**	**900.2**	**1000.2**	**1150.2**	
Sound power level (E)	87	87	87	87	88	88	90	91	91	92	92	93	dB(A)
Sound pressure level at 1 meter	67	67	67	67	68	68	69	69	69	70	70	71	dB(A)
Sound pressure level at 5 meters	59	59	59	59	61	60	62	63	63	63	63	65	dB(A)
Sound pressure level at 10 meters	55	55	55	55	56	56	57	58	58	59	59	60	dB(A)

(E): EUROVENT certified data
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 9614 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.

Technical data

Unit	330.2	370.2	420.2	470.2	510.2	590.2	670.2	740.2	800.2	900.2	1000.2	1150.2	
Power supply	400 - 3 - 50												V-ph-Hz
Compressor type	twin-screw												-
N° compressors / N° refrigerant circuits	2 / 2												n°
Part load	12.5 / 100% stepless												-
Plant side heat exchanger type	shell & tube												-
Source side heat exchanger type	finned coil												-
Fans type	axial												n°
N° fans (AB / AS)	8	8	8	8	10	10	10	12	12	14	14	16	l
N° fans (AX)	8	8	8	8	10	10	12	14	14	16	16	20	
Hydraulic fittings (victaulic)	DN100	DN100	DN125	DN125	DN125	DN150	DN150	DN150	DN150	DN200	DN200	DN200	-

Electrical data

Standard unit		330.2	370.2	420.2	470.2	510.2	590.2	670.2	740.2	800.2	900.2	1000.2	1150.2	
FLA - Full load current at maximum tolerated conditions	AB	274	304	332	360	409	469	469	557	594	684	746	755	A
	AS	274	304	332	360	409	469	469	557	594	684	746	755	
	AX	258	288	316	344	389	449	454	537	574	661	723	732	
FLI - Full load power input at maximum tolerated conditions	AB	164	184	200	216	242	282	282	339	364	412	452	456	kW
	AS	164	184	200	216	242	282	282	339	364	412	452	456	
	AX	157	177	193	209	233	273	275	330	355	402	442	446	
MIC - Maximum instantaneous current of the unit	AB	504	592	689	717	838	921	921	751	788	958	1053	1062	A
	AS	504	592	689	717	838	921	921	751	788	958	1053	1062	
	AX	488	576	673	701	818	901	906	731	768	935	1030	1039	

Operative range

Cooling

Temperature	Unit type	min	max	
Outdoor air inlet temperature	IR, BR	15 (-10*)	46 (50**)	(°C)
Water outlet temperature	IR	5	15	(°C)
Water outlet temperature	BR	-8	5	(°C)
Water outlet temperature (VD)	IR, BR	35	55	(°C)
Water outlet temperature (VR)	IR, BR	35	55	(°C)

* with fans modulating control option (condensation / evaporation control)
** with ATC outdoor high temperature protection fuction

USER INTERFACING

The controller on the unit is designed to ensure energy-saving and efficiency.
It enables the setting of:

- Double Set Point
- Demand Limit
- ATC function to avoid the block of the unit with high outdoor air temperature
- Dinamic set point
- Noise emission control
- Remote stand by

VD and VR versions

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

DESUPERHEATERS VERSION VD

Allows the production of cold water as in the standard version and, simultaneously, of hot water at temperatures from 35 to 50 ° C. This is achieved by inserting, between the compressor and finned coil, a heat exchanger water-gas cooler which allows for heat recovery from 15 to 20% of thermal power.

TOTAL RECOVERY VERSION VR

Allows the production of cold water and simultaneously of hot water at temperatures from 35 to 50 °C by using a heat exchanger, water-gas cooler which allows the total recovery of thermal power. The inclusion and exclusion of the total heat recovery, is done by a valve placed on the discharge of the compressors on each circuit.

Desupeheater Version (VD) - NET NOMINAL performances

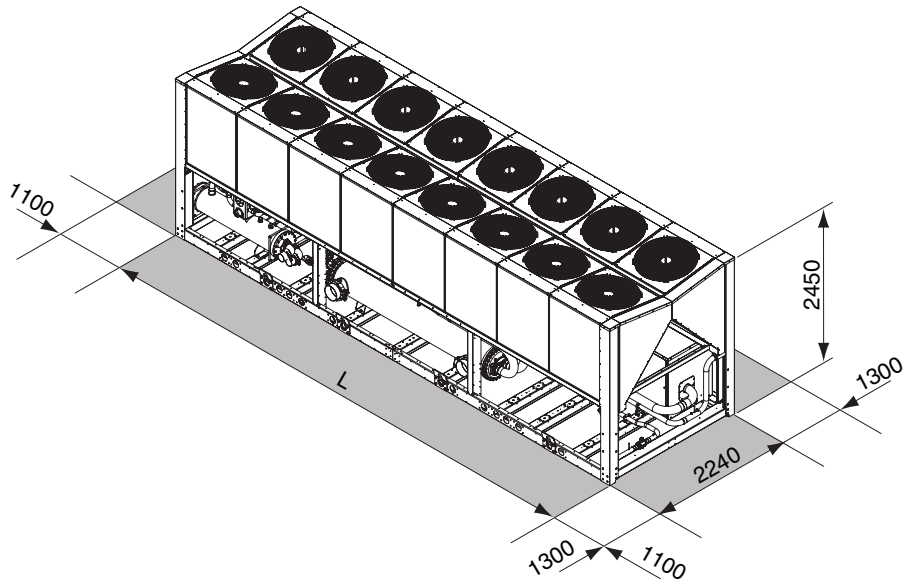
IR	Base setting up (AB)	330.2	370.2	420.2	470.2	510.2	590.2	670.2	740.2	800.2	900.2	1000.2	1150.2	
A35W7 - W45	Cooling capacity	342	377	429	482	526	612	687	767	827	918	1018	1148	kW
	Total power input	118	136	149	165	187	209	223	257	279	323	349	378	kW
	EER	**2,9**	**2,78**	**2,87**	**2,93**	**2,81**	**2,94**	**3,08**	**2,99**	**2,96**	**2,85**	**2,92**	**3,03**	**W/W**
	HRE	**3,69**	**3,58**	**3,69**	**3,75**	**3,63**	**3,76**	**3,91**	**3,81**	**3,78**	**3,67**	**3,76**	**3,86**	**W/W**
	Water flow rate	16,5	18,2	20,6	23,3	25,4	29,5	33	36,9	39,9	44,3	49	55,4	l/s
	Water pressure drop	53	62	47	60	58	57	47	48	56	65	46	61	kPa
	Heating recovery capacity	93	109	122	135	152	171	185	212	231	266	292	313	kW
	Water flow rate recovery	4,5	5,2	5,8	6,4	7,2	8,2	8,8	10,1	11,1	12,7	14	15	l/s
	Water pressure drop recovery	10	13	17	10	13	12	14	18	15	12	15	17	kPa

Total Recovery Version (VR) - NET NOMINAL performances

IR	Base setting up (AB)	330.2	370.2	420.2	470.2	510.2	590.2	670.2	740.2	800.2	900.2	1000.2	1150.2	
A35W7 - W45	Cooling capacity	325	359	413	468	519	593	653	742	799	897	989	1122	kW
	Total power input	109	126	139	153	169	193	212	238	263	297	330	352	kW
	EER	**3**	**2,84**	**2,97**	**3,05**	**3,08**	**3,07**	**3,09**	**3,11**	**3,04**	**3,02**	**3**	**3,18**	**W/W**
	HRE	**6,95**	**6,64**	**6,9**	**7,06**	**7,11**	**7,09**	**7,13**	**7,17**	**7,04**	**6,99**	**6,95**	**7,32**	**W/W**
	Water flow rate	15,7	17,3	19,9	22,6	25	28,6	31,4	35,7	38,5	43,3	47,6	54,1	l/s
	Water pressure drop	48	56	44	56	56	54	43	45	52	62	43	58	kPa
	Heating recovery capacity	429	479	545	614	680	777	855	968	1049	1180	1303	1457	kW
	Water flow rate recovery	20,5	22,9	26	29,3	32,5	37,1	40,8	46,3	50,1	56,4	62,2	69,6	l/s
	Water pressure drop recovery	27	33	43	45	47	43	47	44	52	47	48	50	kPa

Data declared according to **EN 14511**. The values are referred to units without options and accessories.
EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit
HRE (Heat Recovery Efficiency) = ratio of the total capacity of the system (heating plus cooling capacity) to the effectice power input
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

DIMENSIONS - MINIMUM OPERATING AREA - WEIGHT



		330.2	370.2	420.2	470.2	510.2	590.2	670.2	740.2	800.2	900.2	1000.2	1150.2	
L	AB	4070	4070	4070	4070	5005	5005	5005	5950	5950	6900	6900	7810	mm
	AS	4070	4070	4070	4070	5005	5005	5005	5950	5950	6900	6900	7810	mm
	AX	4070	4070	4070	4070	5005	5005	5950	6900	6900	7810	7810	10000	mm
Operating maximum weight*		3734	3800	4192	4534	4731	5059	5318	6567	6715	7377	8032	9091	kg

* Weight refers to the unit IR with tank and pumping module 2 pumps.

> RHV HE

AIR WATER CHILLER
FOR OUTDOOR INSTALLATION

Available range

Unit type
IR Chiller
BR Chiller Brine

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 range of air-water chillers are designed to meet the climate control and air conditioning needs of large capacity systems in the industrial and commercial sectors. Suitable for outdoor installation, as standard the units are equipped with 2 TWIN-SCREW semihermetic compressors mounted on rubber vibration dampers, able to modulate the capacity of the unit from minimum 12.5 (not for all configurations) to 100%, plant side exchanger shell and tube type complete with Victaulic water connections, fitted inside a shell of thermal insulation material to prevent condensation and heat exchange with the outside, optimised for R134a with high efficiency grooved tubes, protected by means of a water differential pressure switch and from the winter freeze to a minimum air temperature of -10°C by means of an antifreeze heater, source side exchanger finned coils with large heat exchange surface, made with copper pipes and louvered aluminium fins, 2 independent refrigerant circuits, complete with electronic expansion valve which optimises unit efficiency at full and partial loads and enables maximum seasonal efficiency, maximum and minimum pressure switch, PED safety valves, dehydrator filter, liquid/moisture indicator, compressor discharge and liquid shut-off valves, high and low pressure transducers, electrical panel with minimum protection IP54 containing the electrical equipment and all the components to control and command the unit complete with main supply breaker with door lock function, phase sequence control device, microprocessor controller with display (4 lines of 20 characters). In addition to the standard features the Low noise setting up (AS) is equipped with fans reduced speed and compressors positioned inside a soundproofed cabin, made with profiles and panels insulated with acoustic material. in addition to the standard features the eXtra low noise setting up (AX) is equipped with coils with larger surface in order to further reduce the fans speed and compressors positioned inside a soundproofed cabin, made with profiles and panels insulated with superior acoustic material. The range is completed with numerous accessories and options, including the possibility of having units equipped with pumping modules with 2 pumps, 2 poles for Basic Version and 4 poles for Low Noise and Extra Low Noise setting up. The units are carefully built and tested, therefore installation only requires the electrical and hydraulic connections.

Options

Compressor starting
- standard (contactors)
- soft starter

Compressors power factor correction
Electrical load protection
- standard (fuses)
- thermal magnetic circuit breakers

Accessories

Integrated Pumping Modules with 2 pumps, supplied in 4 different configurations:
- Pumps 2 poles standard head
- Pumps 2 poles high head
- Pumps 2 poles extra high head
- Pumps 4 poles standard head

Condensation Control Device (standard for AS and AX), enables unit operation to outside air temperatures =-10°C)
Spring vibration dampers
Coil protection grilles
Antintrusion protection grilles
External Water Storage Tank and Pumping Module complete with insulated carbon steel tank, single or twin pump and all hydronic components.
Antifreeze electrical heaters for Storage tank
Remote controller
Serial Interface Modbus on RS 485
Programmer clock
Phase sequence and voltage controller
High and low pressure gauges
Compressor suction shut-off valve
Water flow switch

NET NOMINAL performances - Standard plants - EUROVENT certified data

IR	Base setting up (AB)	330.2	370.2	420.2	470.2	510.2	590.2	670.2	740.2	800.2	900.2	1000.2	1150.2	
A35W7	Cooling capacity	356	395	451	502	557	638	686	796	858	970	1079	1172	kW
	Power input	118	130	147	163	177	206	220	257	278	318	349	368	kW
	EER	3,02	3,04	3,07	3,08	3,14	3,1	3,12	3,09	3,09	3,05	3,09	3,19	W/W
	ESEER	3,61	3,63	3,65	3,69	3,72	3,74	3,77	3,74	3,74	3,7	3,76	3,87	W/W
	Water flow rate	17,2	19	21,7	24,2	26,8	30,7	33,1	38,4	41,3	46,7	52,1	56,5	l/s
	Pressure drops	51	45	40	48	39	49	52	57	50	51	64	53	kPa
IR	Low noise setting up (AS)	330.2	370.2	420.2	470.2	510.2	590.2	670.2	740.2	800.2	900.2	1000.2	1150.2	
A35W7	Cooling capacity	347	386	438	485	544	618	675	774	832	941	1044	1152	kW
	Power input	115	128	145	163	175	208	227	259	283	318	350	374	kW
	EER	3,03	3,03	3,03	2,99	3,1	2,98	2,98	2,99	2,94	2,96	2,98	3,08	W/W
	ESEER	3,81	3,8	3,79	3,68	3,86	3,84	3,85	3,86	3,76	3,82	3,87	3,98	W/W
	Water flow rate	16,7	18,6	21,1	23,4	26,1	29,8	32,5	37,3	40	45,3	50,4	55,5	l/s
	Pressure drops	49	43	38	45	37	46	51	54	47	48	60	51	kPa
IR	eXtra low noise setting up (AX)	330.2	370.2	420.2	470.2	510.2	590.2	670.2	740.2	800.2	900.2	1000.2	1150.2	
A35W7	Cooling capacity	335	376	422	463	529	590	650	741	799	913	1022	1121	kW
	Power input	117	130	149	169	182	218	238	269	294	323	362	394	kW
	EER	2,85	2,88	2,82	2,74	2,91	2,71	2,73	2,76	2,72	2,83	2,82	2,85	W/W
	ESEER	3,69	3,71	3,66	3,64	3,76	3,62	3,64	3,69	3,66	3,76	3,74	3,78	W/W
	Water flow rate	16,1	18,1	20,3	22,3	25,4	28,4	31,3	35,7	38,5	44	49,3	54	l/s
	Pressure drops	45	41	35	41	35	42	47	49	43	45	57	48	kPa

Data declared according to **EN 14511**. The values are referred to units without options and accessories.
EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit
ESEER (European Seasonal Energy Efficiency Ratio)
____ = Unit in **A CLASS.**
A35W7 = source : air in 35°C d.b. / plant : water in 12°C out 7°C

Acoustic performances

Base setting up (AB)	330.2	370.2	420.2	470.2	510.2	590.2	670.2	740.2	800.2	900.2	1000.2	1150.2	
Sound power level (E)	97	97	97	97	99	99	99	100	100	101	101	102	dB(A)
Sound pressure level at 1 meter	77	77	77	77	79	78	78	79	79	80	79	80	dB(A)
Sound pressure level at 5 meters	69	69	69	69	71	71	71	72	72	73	72	73	dB(A)
Sound pressure level at 10 meters	65	65	65	65	67	67	67	67	67	68	68	69	dB(A)
Low noise setting up (AS)	**330.2**	**370.2**	**420.2**	**470.2**	**510.2**	**590.2**	**670.2**	**740.2**	**800.2**	**900.2**	**1000.2**	**1150.2**	
Sound power level (E)	92	92	92	92	93	93	93	95	95	96	96	97	dB(A)
Sound pressure level at 1 meter	72	72	72	72	73	72	72	74	74	75	74	75	dB(A)
Sound pressure level at 5 meters	64	64	64	64	65	65	65	67	67	68	67	68	dB(A)
Sound pressure level at 10 meters	60	60	60	60	61	61	61	62	62	63	63	64	dB(A)
eXtra low noise setting up (AX)	**330.2**	**370.2**	**420.2**	**470.2**	**510.2**	**590.2**	**670.2**	**740.2**	**800.2**	**900.2**	**1000.2**	**1150.2**	
Sound power level (E)	87	87	88	88	90	90	90	91	91	92	92	93	dB(A)
Sound pressure level at 1 meter	67	67	68	68	70	69	69	70	70	71	70	71	dB(A)
Sound pressure level at 5 meters	59	59	60	60	62	62	62	63	63	64	63	64	dB(A)
Sound pressure level at 10 meters	55	55	56	56	58	58	58	58	58	59	59	60	dB(A)

(E): EUROVENT certified data
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 9614 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.

Technical data

Unit	330.2	370.2	420.2	470.2	510.2	590.2	670.2	740.2	800.2	900.2	1000.2	1150.2	
Power supply	400 - 3 - 50												V-ph-Hz
Compressor type	twin-screw												-
N° compressors / N° refrigerant circuits	2 / 2												n°
Part load	12.5 / 100% stepless												-
Plant side heat exchanger type	shell & tube												-
Source side heat exchanger type	finned coil												-
Fans type	axial												n°
N° fans	8		10			12		14		16	20		l
Hydraulic fittings (victaulic)	DN150		DN200										-

Electrical data

Standard unit	330.2	370.2	420.2	470.2	510.2	590.2	670.2	740.2	800.2	900.2	1000.2	1150.2	
FLA - Full load current at maximum tolerated conditions	274	304	341	369	409	478	478	565	602	693	772	772	A
FLI - Full load power input at maximum tolerated conditions	164	184	204	220	242	286	286	343	368	416	464	464	kW
MIC - Maximum instantaneous current of the unit	504	592	698	726	838	930	930	759	796	967	1079	1079	A

Operative range

Cooling

Temperature	Unit type	min	max	
Outdoor air inlet temperature	IR, BR	15 (-10*)	50 (55**)	(°C)
Water outlet temperature	IR	5	15	(°C)
Water outlet temperature	BR	-8	5	(°C)
Water outlet temperature (VD)	IR, BR	35	50	(°C)
Water outlet temperature (VR)	IR, BR	35	50	(°C)

* with fans modulating control option (condensation / evaporation control)
** with ATC outdoor high temperature protection fuction

USER INTERFACING

The controller on the unit is designed to ensure energy-saving and efficiency.
It enables the setting of:

- Double Set Point
- Demand Limit
- ATC function to avoid the block of the unit with high outdoor air temperature
- Dinamic set point
- Noise emission control
- Remote stand by

VD and VR versions

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

DESUPERHEATERS VERSION VD

Allows the production of cold water as in the standard version and, simultaneously, of hot water at temperatures from 35 to 50 ° C. This is achieved by inserting, between the compressor and finned coil, a heat exchanger water-gas cooler which allows for heat recovery from 15 to 20% of thermal power.

TOTAL RECOVERY VERSION VR

Allows the production of cold water and simultaneously of hot water at temperatures from 35 to 50 °C by using a heat exchanger, water-gas cooler which allows the total recovery of thermal power. The inclusion and exclusion of the total heat recovery, is done by a valve placed on the discharge of the compressors on each circuit.

Desupeheater Version (VD) - NET NOMINAL performances

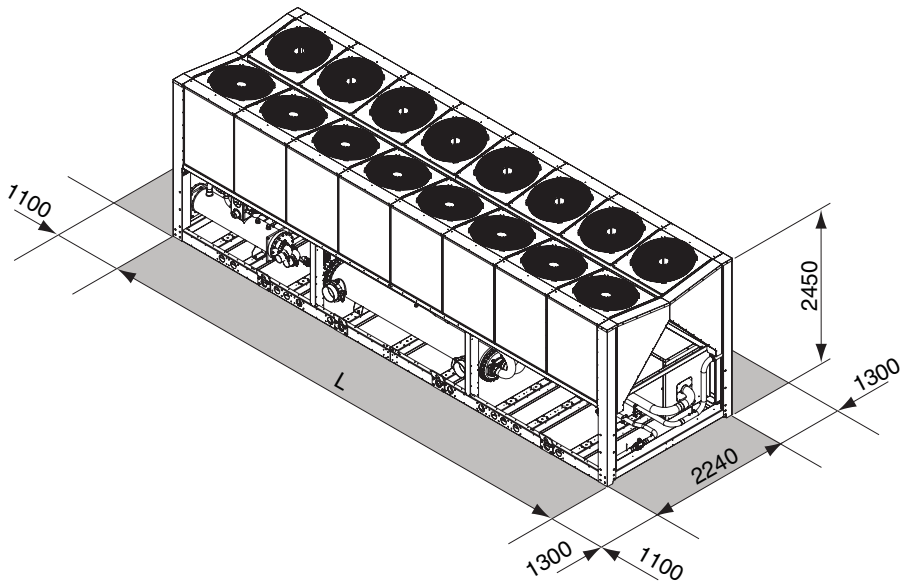
IR	Base setting up (AB)	330.2	370.2	420.2	470.2	510.2	590.2	670.2	740.2	800.2	900.2	1000.2	1150.2	
A35W7 - W45	Cooling capacity	370	411	469	522	578	663	714	827	892	1008	1122	1218	kW
	Total power input	115	127	143	159	173	202	214	251	272	311	341	359	kW
	EER	**3,21**	**3,23**	**3,27**	**3,27**	**3,34**	**3,29**	**3,33**	**3,29**	**3,28**	**3,24**	**3,28**	**3,39**	**W/W**
	HRE	**4,01**	**4,05**	**4,08**	**4,09**	**4,18**	**4,11**	**4,15**	**4,11**	**4,12**	**4,08**	**4,1**	**4,22**	**W/W**
	Water flow rate	17,8	19,8	22,6	25,1	27,8	31,9	34,4	39,9	43	48,6	54,2	58,7	l/s
	Water pressure drop	55	49	43	52	42	53	56	62	54	55	69	57	kPa
	Heating recovery capacity	93	104	116	130	144	165	177	207	227	259	278	297	kW
	Water flow rate recovery	4,4	5	5,5	6,2	6,9	7,9	8,5	9,9	10,8	12,4	13,3	14,2	l/s
	Water pressure drop recovery	10	12	15	9	11	11	13	18	15	11	14	15	kPa

Total Recovery Version (VR) - NET NOMINAL performances

IR	Base setting up (AB)	330.2	370.2	420.2	470.2	510.2	590.2	670.2	740.2	800.2	900.2	1000.2	1150.2	
A35W7 - W45	Cooling capacity	354	390	447	499	552	635	684	794	865	992	1082	1169	kW
	Total power input	107	121	133	147	161	187	200	233	251	283	313	333	kW
	EER	**3,31**	**3,23**	**3,37**	**3,4**	**3,42**	**3,4**	**3,43**	**3,4**	**3,44**	**3,5**	**3,45**	**3,51**	**W/W**
	HRE	**7,58**	**7,41**	**7,69**	**7,76**	**7,79**	**7,74**	**7,8**	**7,76**	**7,84**	**7,95**	**7,86**	**7,97**	**W/W**
	Water flow rate	17,1	18,8	21,5	24	26,5	30,6	33	38,3	41,7	47,8	52,2	56,3	l/s
	Water pressure drop	51	44	39	47	38	49	52	57	51	53	64	53	kPa
	Heating recovery capacity	456	505	574	639	705	813	874	1016	1104	1261	1380	1486	kW
	Water flow rate recovery	21,8	24,1	27,4	30,5	33,7	38,8	41,8	48,5	52,7	60,3	65,9	71	l/s
	Water pressure drop recovery	30	37	48	49	51	47	49	49	58	54	54	52	kPa

Data declared according to **EN 14511**. The values are referred to units without options and accessories.
EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit
HRE (Heat Recovery Efficiency) = ratio of the total capacity of the system (heating plus cooling capacity) to the effectice power input
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

DIMENSIONS - MINIMUM OPERATING AREA - WEIGHT



	330.2	370.2	420.2	470.2	510.2	590.2	670.2	740.2	800.2	900.2	1000.2	1150.2	
L (AB-AS-AX)	4070		5005			5950		6900		7810	10000		mm
Operating maximum weight*	3950	4116	4971	5303	5546	5687	6004	7345	7378	8589	9494	10220	kg

* Weight refers to the unit IR with tank and pumping module 2 pumps.

> RMP

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)

Versions

VB	Base Version
VP	Pump version
VA	Tank version

Acoustic setting up

AB	Base setting up
AS	Low noise setting up

Unit description

This series of air-water chillers and heat pumps satisfies the cooling and heating 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.

The refrigerant circuit, contained in a compartment protected from the air flow to simplify the maintenance operations, is equipped with scroll compressor mounted on damper supports, brazed plate heat exchanger, thermostatic expansion valve, reverse cycle valve, centrifugal fans (plug fan), finned coil made of copper pipes and aluminium louvered fins. The circuit is protected by 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 are 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.

All the units are supplied with an outdoor temperature sensor, already installed on the unit, in order to realize the climatic control.

All the units are provided with a phase presence and correct sequence controller device.

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
- not present (VB - base version)
- standard, high head or modulating pump (VP - pump version)
- tank and standard, high head or modulating pump (VA - tank version)

Integrative electrical heaters
- not present
- standard in the tank

Compressor starting
- standard (contactors)
- soft starter

Electrical loads protection
- fuses
- thermal magnetic circuit breakers

Compressor power factor correction

Accessories

Rubber vibration dampers
Coil protection grille
Tank antifreeze electrical heater
Remote control
Modbus serial interface on RS485
Programmer clock
Phase sequence and voltage controller

NET NOMINAL performances - Standard plants - EUROVENT certified data

IR	Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
A35W7	Cooling capacity	19,9	22,1	25,8	30,8	35,6	40,2	kW
	Power input	6,82	7,50	8,76	10,8	12,3	13,9	kW
	EER	2,92	2,95	2,95	2,85	2,89	2,89	W/W
	ESEER	3,26	3,29	3,28	3,20	3,24	3,23	W/W
	Water flow rate	0,953	1,06	1,23	1,48	1,71	1,93	l/s
	Pressure drops	26	31	26	36	31	38	kPa
IR	Low noise setting up (AS)	19.1	22.1	26.1	30.1	35.1	40.1	
A35W7	Cooling capacity	19,1	21,2	24,8	29,6	34,2	38,6	kW
	Power input	7,34	8,09	9,42	11,6	13,3	15,0	kW
	EER	2,60	2,62	2,63	2,55	2,57	2,57	W/W
	ESEER	2,89	2,93	2,93	2,86	2,88	2,87	W/W
	Water flow rate	0,915	1,02	1,19	1,42	1,64	1,85	l/s
	Pressure drops	24	29	24	33	28	36	kPa
IP	Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
A35W7	Cooling capacity	19,5	21,7	25,3	30,2	34,9	39,4	kW
	Power input	6,75	7,42	8,66	10,7	12,2	13,8	kW
	EER	2,89	2,92	2,92	2,82	2,86	2,86	W/W
	ESEER	3,22	3,27	3,26	3,18	3,21	3,19	W/W
	Water flow rate	0,934	1,04	1,21	1,45	1,67	1,89	l/s
	Pressure drops	25	30	25	35	29	37	kPa
A7W45	Heating capacity	21,0	23,3	27,1	32,5	37,6	42,4	kW
	Power input	6,49	7,14	8,33	10,3	11,7	13,4	kW
	COP	3,24	3,26	3,25	3,16	3,21	3,16	W/W
	Water flow rate	0,991	1,10	1,28	1,53	1,77	2,00	l/s
	Pressure drops	27	33	27	38	33	41	kPa
IP	Low noise setting up (AS)	19.1	22.1	26.1	30.1	35.1	40.1	
A35W7	Cooling capacity	18,7	20,8	24,3	29,1	33,6	37,8	kW
	Power input	7,27	8,00	9,33	11,4	13,1	14,9	kW
	EER	2,57	2,60	2,60	2,55	2,56	2,54	W/W
	ESEER	2,86	2,89	2,89	2,83	2,84	2,84	W/W
	Water flow rate	0,896	1,00	1,16	1,39	1,61	1,81	l/s
	Pressure drops	23	28	23	32	27	34	kPa
A7W45	Heating capacity	19,9	22,2	25,8	31,0	35,8	40,3	kW
	Power input	6,22	6,85	7,98	9,88	11,3	12,8	kW
	COP	3,20	3,24	3,23	3,14	3,17	3,15	W/W
	Water flow rate	0,939	1,05	1,22	1,46	1,69	1,90	l/s
	Pressure drops	25	30	25	35	30	37	kPa

NET NOMINAL performances - Radiant plants

IR	Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
A35W18	Cooling capacity	24,6	27,3	31,9	38,1	44,1	49,6	kW
	Power input	7,09	7,81	9,11	11,2	12,8	14,6	kW
	EER	3,47	3,50	3,50	3,40	3,45	3,40	W/W
	Water flow rate	1,18	1,31	1,53	1,83	2,12	2,39	l/s
	Pressure drops	39	47	38	54	46	58	kPa
IP	Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
A35W18	Cooling capacity	24,2	26,8	31,3	37,4	43,2	48,7	kW
	Power input	7,01	7,73	9,01	11,1	12,7	14,4	kW
	EER	3,45	3,47	3,47	3,37	3,40	3,38	W/W
	Water flow rate	1,16	1,29	1,50	1,80	2,08	2,34	l/s
	Pressure drops	37	45	37	52	44	56	kPa
A7W35	Heating capacity	21,40	23,80	27,70	33,20	38,40	43,30	kW
	Power input	5,48	6,03	7,03	8,71	9,91	11,30	kW
	COP	3,91	3,95	3,94	3,81	3,87	3,83	W/W
	Water flow rate	1,01	1,13	1,31	1,57	1,82	2,05	l/s
	Pressure drops	29	35	29	40	34	43	kPa

Data declared according to **EN 14511**. The values are referred to units without options and accessories.
EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit
COP (Coefficient Of Performance) = ratio of the total heating capacity to the effective power input of the unit

ESEER (European Seasonal Energy Efficiency Ratio)
____ = Unit in **A CLASS.**
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

Acoustic performances

Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
Sound power level (E)	76	76	77	80	81	81	dB(A)
Sound pressure level at 1 meter	60	60	61	64	65	65	dB(A)
Sound pressure level at 5 meters	50	50	51	54	55	55	dB(A)
Sound pressure level at 10 meters	45	45	46	49	49	50	dB(A)
Low noise setting up (AS)	**19.1**	**22.1**	**26.1**	**30.1**	**35.1**	**40.1**	
Sound power level (E)	74	74	75	78	79	79	dB(A)
Sound pressure level at 1 meter	58	58	59	62	63	63	dB(A)
Sound pressure level at 5 meters	48	48	49	52	53	53	dB(A)
Sound pressure level at 10 meters	43	43	44	47	47	48	dB(A)

(E): EUROVENT certified data
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 9614 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.

Technical data

Unit	19.1	22.1	26.1	30.1	35.1	40.1	
Power supply	400 - 3+N - 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	finned coil						-
Fans type	centrifugal (plug fan)						-
N° fans	1						n°
Tank volume	85						l
Hydraulic fittings	1"1/4 VICTAULIC						-

Electrical data

Standard unit	19.1	22.1	26.1	30.1	35.1	40.1	
FLA - Full load current at maximum tolerated conditions	28,9	30,9	33,0	28,0	32,0	36,1	A
FLI - Full load power input at maximum tolerated conditions	13,0	14,3	15,6	16,8	19,4	22,0	kW
MIC - Maximum instantaneous current of the unit	108	124	131	131	146	180	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	65	74	78	75	84	104	A
Unit with high head modulating pump	**19.1**	**22.1**	**26.1**	**30.1**	**35.1**	**40.1**	
FLA - Full load current at maximum tolerated conditions	35	37	39,1	34,1	40,2	44,3	A
FLI - Full load power input at maximum tolerated conditions	14,2	15,5	16,8	18	21	23,6	kW
MIC - Maximum instantaneous current of the unit	114,1	130,1	137,1	137,1	154,2	188,2	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	71,1	80,1	84,1	81,1	92,2	112,2	A

Operating range

		Cooling		Heating		
Temperatura	**Unit type**	**min**	**max**	**min**	**max**	
Outdoor air inlet temperature	IR, BR, IP, BP	-10*	48	-15	42	(°C)
Water outlet temperature	IR, IP	5	25	30	55	(°C)
Water outlet temperature	BR, BP	-12	25	30	55	(°C)

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

Aeraulic performances

Unit	19.1	22.1	26.1	30.1	35.1	40.1	
Available static head	150	150	150	150	150	150	Pa

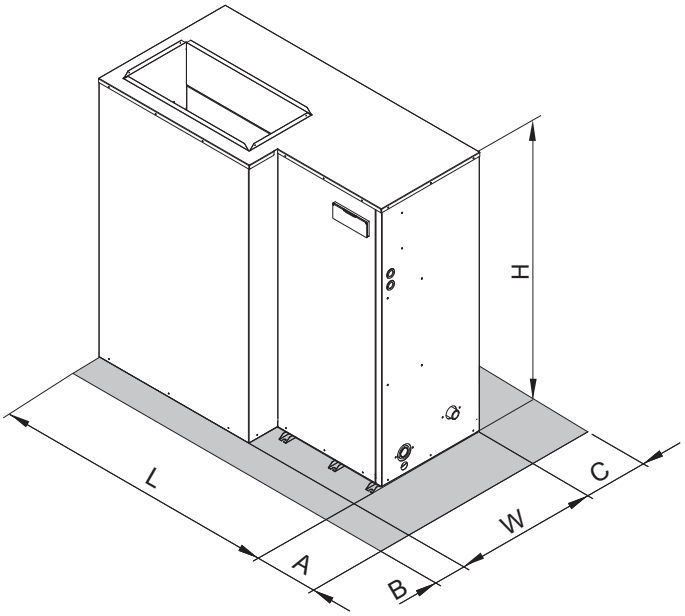
CONTROL SYSTEM

The unit is managed by a microprocessor controller to which, through a wiring board, all the electrical loads and the control devices are connected. The user interface is realized by a display and four buttons that allow to view and, if necessary, modify all the operating parameters of the unit. It's available, as an accessory, a remote control that reports all the functionalities of the user interface placed on the unit.

The main functions available are :

- water temperature management (through set point adjustment)
- adaptive function
- climatic control in heating and in cooling mode (automatic set point adjustment according to outdoor air temperature)
- dynamic defrost cycle management according to outdoor air temperature
- alarm memory management and diagnostic
- fans management by means of continuous rotational speed control
- pump management
- integrative electrical heaters management in heating mode (2 step logic)
- compressor and pump operating hours recording
- serial communication through Modbus protocol
- remote stand by
- remote cooling-heating
- general alarm digital output

DIMENSIONS AND MINIMUM OPERATING AREA



	19.1	22.1	26.1	30.1	35.1	40.1	
L		1494			1704		mm
W		744			744		mm
H		1453			1453		mm
A		400			400		mm
B		450			450		mm
C		200			200		mm
Maximum weight operation (VA Tank version)	384	387	406	408	434	436	kg

> RMP HE

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)

Versions

VB	Base Version
VP	Pump version
VA	Tank version

Acoustic setting up

AB	Base setting up
AS	Low noise setting up

Unit description

This series of air-water chillers and heat pumps satisfies the cooling and heating 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.

The refrigerant circuit, contained in a compartment protected from the air flow to simplify the maintenance operations, is equipped with scroll compressor mounted on damper supports, brazed plate heat exchanger, thermostatic expansion valve, reverse cycle valve, centrifugal fans (plug fan), finned coil made of copper pipes and aluminium louvered fins. The circuit is protected by 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 are 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.

All the units are supplied with an outdoor temperature sensor, already installed on the unit, in order to realize the climatic control.

All the units are provided with a phase presence and correct sequence controller device.

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
- not present (VB - base version)
- standard, high head or modulating pump (VP - pump version)
- tank and standard, high head or modulating pump (VA - tank version)

Integrative electrical heaters
- not present
- standard in the tank

Compressor starting
- standard (contactors)
- soft starter

Electrical loads protection
- fuses
- thermal magnetic circuit breakers

Compressor power factor correction

Accessories

Rubber vibration dampers
Coil protection grille
Tank antifreeze electrical heater
Remote control
Modbus serial interface on RS485
Programmer clock
Phase sequence and voltage controller

NET NOMINAL performances - Standard plants - EUROVENT certified data

IR	Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
A35W7	Cooling capacity	20,1	22,3	26,1	31,5	36,6	41,3	kW
	Power input	6,51	7,15	8,29	10,3	11,9	13,5	kW
	EER	3,09	3,12	3,15	3,06	3,08	3,06	W/W
	ESEER	3,44	3,48	3,51	3,44	3,45	3,45	W/W
	Water flow rate	0,963	1,07	1,25	1,51	1,75	1,98	l/s
	Pressure drops	26	32	26	37	32	41	kPa
IR	**Low noise setting up (AS)**	**19.1**	**22.1**	**26.1**	**30.1**	**35.1**	**40.1**	
A35W7	Cooling capacity	19,3	21,4	25,1	30,3	35,2	39,8	kW
	Power input	7,02	7,71	8,94	11,1	12,8	14,4	kW
	EER	2,75	2,78	2,81	2,73	2,75	2,76	W/W
	ESEER	3,06	3,10	3,12	3,07	3,08	3,09	W/W
	Water flow rate	0,925	1,02	1,20	1,45	1,69	1,91	l/s
	Pressure drops	24	29	24	35	30	38	kPa
IP	**Base setting up (AB)**	**19.1**	**22.1**	**26.1**	**30.1**	**35.1**	**40.1**	
A35W7	Cooling capacity	19,7	21,9	25,6	30,9	35,9	40,5	kW
	Power input	6,45	7,08	8,20	10,2	11,8	13,4	kW
	EER	3,05	3,09	3,12	3,03	3,04	3,02	W/W
	ESEER	3,40	3,46	3,47	3,42	3,40	3,40	W/W
	Water flow rate	0,944	1,05	1,23	1,48	1,72	1,94	l/s
	Pressure drops	25	31	25	36	31	39	kPa
A7W45	Heating capacity	21,2	23,5	27,4	33,3	38,6	43,8	kW
	Power input	6,21	6,82	7,89	9,79	11,3	12,9	kW
	COP	3,41	3,45	3,47	3,40	3,42	3,40	W/W
	Water flow rate	1,00	1,11	1,29	1,57	1,82	2,06	l/s
	Pressure drops	28	34	28	40	34	43	kPa
IP	**Low noise setting up (AS)**	**19.1**	**22.1**	**26.1**	**30.1**	**35.1**	**40.1**	
A35W7	Cooling capacity	18,9	21,0	24,6	29,7	34,5	39,0	kW
	Power input	6,95	7,63	8,84	11,0	12,7	14,3	kW
	EER	2,72	2,75	2,78	2,70	2,72	2,73	W/W
	ESEER	3,03	3,07	3,09	3,04	3,05	3,05	W/W
	Water flow rate	0,906	1,01	1,18	1,43	1,65	1,87	l/s
	Pressure drops	23	28	23	34	29	36	kPa
A7W45	Heating capacity	20,1	22,3	26,1	31,7	36,7	41,7	kW
	Power input	5,95	6,54	7,56	9,38	10,9	12,4	kW
	COP	3,38	3,41	3,45	3,38	3,37	3,36	W/W
	Water flow rate	1,25	1,39	1,63	1,97	2,28	2,58	l/s
	Pressure drops	25	31	25	36	31	40	kPa

NET NOMINAL performances - Radiant plants

IR	Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
A35W18	Cooling capacity	26,1	28,9	33,9	40,8	47,4	53,5	kW
	Power input	6,67	7,35	8,49	10,6	12,2	13,9	kW
	EER	3,91	3,93	3,99	3,85	3,89	3,85	W/W
	Water flow rate	1,25	1,39	1,63	1,97	2,28	2,58	l/s
	Pressure drops	43	52	43	62	53	67	kPa
IP	**Base setting up (AB)**	**19.1**	**22.1**	**26.1**	**30.1**	**35.1**	**40.1**	
A35W18	Cooling capacity	25,5	28,4	33,2	40,0	46,5	52,5	kW
	Power input	6,60	7,27	8,40	10,5	12,1	13,7	kW
	EER	3,86	3,91	3,95	3,81	3,84	3,83	W/W
	Water flow rate	1,23	1,36	1,59	1,93	2,24	2,53	l/s
	Pressure drops	41	50	41	59	51	64	kPa
A7W35	Heating capacity	21,6	24,0	28,0	34,0	39,4	44,7	kW
	Power input	5,24	5,76	6,66	8,28	9,57	10,9	kW
	COP	4,12	4,17	4,20	4,11	4,12	4,10	W/W
	Water flow rate	1,02	1,14	1,33	1,61	1,87	2,11	l/s
	Pressure drops	29	36	29	42	36	46	kPa

Data declared according to **EN 14511**. The values are referred to units without options and accessories.
EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit
COP (Coefficient Of Performance) = ratio of the total heating capacity to the effective power input of the unit

ESEER (European Seasonal Energy Efficiency Ratio)
_____ = Unit in **A CLASS.**
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

Acoustic performances

Base setting up (AB)	19.1	22.1	26.1	30.1	35.1	40.1	
Sound power level (E)	76	76	77	80	81	81	dB(A)
Sound pressure level at 1 meter	60	60	61	64	65	65	dB(A)
Sound pressure level at 5 meters	50	50	51	54	55	55	dB(A)
Sound pressure level at 10 meters	45	45	46	49	49	50	dB(A)
Low noise setting up (AS)	**19.1**	**22.1**	**26.1**	**30.1**	**35.1**	**40.1**	
Sound power level (E)	74	74	75	78	79	79	dB(A)
Sound pressure level at 1 meter	58	58	59	62	63	63	dB(A)
Sound pressure level at 5 meters	48	48	49	52	53	53	dB(A)
Sound pressure level at 10 meters	43	43	44	47	47	48	dB(A)

(E): EUROVENT certified data
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 9614 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.

Technical data

Unit	19.1	22.1	26.1	30.1	35.1	40.1	
Power supply	400 - 3+N - 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	finned coil						-
Fans type	centrifugal (plug fan)						-
N° fans	1						n°
Tank volume	85						l
Hydraulic fittings	1"1/4 VICTAULIC						-

Electrical data

Standard unit	19.1	22.1	26.1	30.1	35.1	40.1	
FLA - Full load current at maximum tolerated conditions	28,9	30,9	33,0	28,0	32,0	36,1	A
FLI - Full load power input at maximum tolerated conditions	13,0	14,3	15,6	16,8	19,4	22,0	kW
MIC - Maximum instantaneous current of the unit	108	124	131	131	146	180	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	65	74	78	75	84	104	A
Unit with high head modulating pump	**19.1**	**22.1**	**26.1**	**30.1**	**35.1**	**40.1**	
FLA - Full load current at maximum tolerated conditions	35	37	39,1	34,1	40,2	44,3	A
FLI - Full load power input at maximum tolerated conditions	14,2	15,5	16,8	18	21	23,6	kW
MIC - Maximum instantaneous current of the unit	114,1	130,1	137,1	137,1	154,2	188,2	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	71,1	80,1	84,1	81,1	92,2	112,2	A

Operating range

		Cooling		Heating		
Temperatura	**Unit type**	**min**	**max**	**min**	**max**	
Outdoor air inlet temperature	IR, BR, IP, BP	-10*	48	-15	42	(°C)
Water outlet temperature	IR, IP	5	25	30	55	(°C)
Water outlet temperature	BR, BP	-12	25	30	55	(°C)

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

Aeraulic performances

Unit	19.1	22.1	26.1	30.1	35.1	40.1	
Available static head	150	150	150	150	150	150	Pa

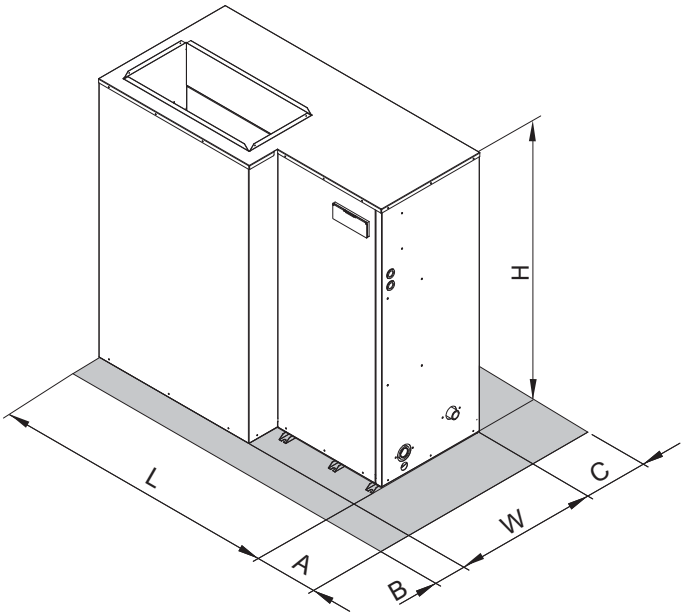
CONTROL SYSTEM

The unit is managed by a microprocessor controller to which, through a wiring board, all the electrical loads and the control devices are connected. The user interface is realized by a display and four buttons that allow to view and, if necessary, modify all the operating parameters of the unit. It's available, as an accessory, a remote control that reports all the functionalities of the user interface placed on the unit.

The main functions available are :

- water temperature management (through set point adjustment)
- adaptive function
- climatic control in heating and in cooling mode (automatic set point adjustment according to outdoor air temperature)
- dynamic defrost cycle management according to outdoor air temperature
- alarm memory management and diagnostic
- fans management by means of continuous rotational speed control
- pump management
- integrative electrical heaters management in heating mode (2 step logic)
- compressor and pump operating hours recording
- serial communication through Modbus protocol
- remote stand by
- remote cooling-heating
- general alarm digital output

DIMENSIONS AND MINIMUM OPERATING AREA



	19.1	22.1	26.1	30.1	35.1	40.1	
L		1494			1704		mm
W		744			744		mm
H		1453			1453		mm
A		400			400		mm
B		450			450		mm
C		200			200		mm
Maximum weight operation (VA Tank version)	399	402	426	433	459	461	kg

> 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

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 (standard for IP)

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

NET NOMINAL performances - Standard plants - EUROVENT certified data

IR	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	
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	W/W
	ESEER	3,93	3,90	3,85	3,91	3,84	3,93	3,86	3,93	3,82	3,89	3,77	3,80	3,82	W/W
	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
IR	**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	W/W
	ESEER	3,93	3,90	3,85	3,91	3,84	3,93	3,86	3,93	3,82	3,89	3,77	3,80	3,82	W/W
	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)**	**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	43,5	52,4	57,0	66,7	73,6	88,5	98	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	W/W
	ESEER	3,84	3,82	3,80	3,80	3,73	3,87	3,78	3,87	3,73	3,84	3,72	3,82	3,79	W/W
	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
	Pressure drops	37	55	53	49	44	46	43	43	45	44	46	47	49	kPa
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	W/W
	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
IP	**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	43,5	52,4	57,0	66,7	73,6	88,5	98	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	W/W
	ESEER	3,84	3,82	3,80	3,80	3,73	3,87	3,78	3,87	3,73	3,84	3,72	3,82	3,79	W/W
	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
	Pressure drops	37	55	53	49	44	46	43	43	45	44	46	47	49	kPa
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	W/W
	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.
EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit
COP (Coefficient Of Performance) = ratio of the total heating capacity to the effective power input of the unit

ESEER (European Seasonal Energy Efficiency Ratio)
____ = Unit in **A CLASS.**
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

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 (E)	88	88	89	89	89	91	91	91	96	97	97	98	98	dB(A)
Sound pressure level at 1 meter	70	70	71	71	71	73	73	73	78	79	79	80	80	dB(A)
Sound pressure level at 5 meters	61	61	62	62	62	65	65	65	69	70	70	71	71	dB(A)
Sound pressure level at 10 meters	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 (E)	85	85	86	86	86	88	88	88	93	94	94	95	95	dB(A)
Sound pressure level at 1 meter	67	67	68	68	68	70	70	70	75	76	76	77	77	dB(A)
Sound pressure level at 5 meters	58	58	59	59	59	62	62	62	66	67	67	68	68	dB(A)
Sound pressure level at 10 meters	53	53	54	54	54	56	56	56	61	62	62	63	63	dB(A)

(E): EUROVENT certified data
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 9614 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.

Technical data

Unit	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	
Power supply	400 - 3 - 50													V-ph-Hz
Compressor type	scroll													-
N° compressors / N° refrigerant circuits	2 / 1													n°
Plant side heat exchanger type	stainless steel brazed plates													-
Source side heat exchanger type	finned coil													-
Fans type	centrifugal													-
N° fans	1					2			3			4		n°
Tank volume	200					400						460		l
Hydraulic fittings	2" VICTAULIC					2" 1/2 VICTAULIC								-

Electrical data

Standard unit	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	
FLA - Full load current at maximum tolerated conditions	43,2	48,8	56,7	62,1	73,0	80,5	95,0	103	117	145	158	188	199	A
FLI - Full load power input at maximum tolerated conditions	25,2	28,0	33,0	35,6	40,8	47,3	58,3	63,8	72,8	88,7	96,3	113	120	kW
MIC - Maximum instantaneous current of the unit	137	147	152	177	216	269	264	272	278	370	383	384	420	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	92,4	99,4	105	121	147	179	180	188	194	222	268	277	301	A
Unit with high head modulating pump	**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**	
FLA - Full load current at maximum tolerated conditions	49,3	54,9	62,8	68,2	79,1	86,6	101	112	126	153	166	198	209	A
FLI - Full load power input at maximum tolerated conditions	28,7	31,5	36,5	39,1	44,3	50,8	61,8	68,4	77,3	93,2	101	119	126	kW
MIC - Maximum instantaneous current of the unit	143	153	158	183	222	275	270	281	287	378	392	394	430	A
MIC SS - Maximum instantaneous current of the unit with soft starter options	98,5	105	111	127	153	185	186	197	203	231	277	287	311	A

Operative range

		Cooling		Heating		
Temperature	**Unit type**	**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 fans modulating control option (condensation / evaporation control)

Aeraulic performance

Unit	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	
Available static head	150	150	150	150	150	150	150	150	150	150	150	150	150	Pa

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.

Desupeheater Version (VD) - NET NOMINAL performances

IR	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	
A35W7 - W45	Cooling capacity	46,8	55,1	60,3	71	81,1	93,8	105	115	130	148	163	185	206	kW
	Total power input	15,3	18,3	20,3	23,4	27,3	31,8	35,1	38,9	44	50,3	55,8	63	69,9	kW
	EER	3,05	3	2,98	3,03	2,97	2,95	2,99	2,96	2,95	2,94	2,92	2,94	2,95	W/W
	HRE	3,93	3,86	3,84	3,88	3,83	3,8	3,86	3,85	3,83	3,81	3,8	3,82	3,83	W/W
	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	23,6	27,1	30,4	34,4	38,4	44	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	2,1	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)**	**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	45,3	54,5	59,3	69,3	76,5	92,1	102	113	126	143	159	183	204	kW
	Total power input	15,1	18,5	20,1	23,5	26,4	31,5	34,9	38,7	43,4	49,1	54,9	62,1	69,5	kW
	EER	3	2,94	2,94	2,95	2,9	2,92	2,93	2,92	2,9	2,91	2,89	2,95	2,94	W/W
	HRE	3,86	3,76	3,79	3,78	3,77	3,75	3,77	3,78	3,76	3,77	3,75	3,8	3,77	W/W
	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	15,2	17	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	1,4	1,59	1,77	2,03	2,27	2,5	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) - NET NOMINAL performances

IR	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	
A35W7 - W45	Cooling capacity	46,8	55,1	60,3	71	81,1	93,8	105	115	130	148	163	185	206	kW
	Total power input	13,9	16,9	18,4	21,4	25,3	27,9	31,1	35	40	44,4	49,9	55,3	62,1	kW
	EER	3,36	3,25	3,28	3,31	3,2	3,36	3,38	3,29	3,25	3,33	3,26	3,35	3,32	W/W
	HRE	7,67	7,46	7,52	7,58	7,35	7,67	7,71	7,52	7,45	7,61	7,47	7,65	7,59	W/W
	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	71,2	77,8	91,4	105	120	135	148	168	190	210	238	265	kW
	Water flow rate recovery	2,87	3,4	3,72	4,37	5,02	5,73	6,45	7,07	8,03	9,08	10	11,4	12,7	l/s
	Water pressure drop recovery	35	49	41	45	50	48	52	47	52	51	52	55	55	kPa

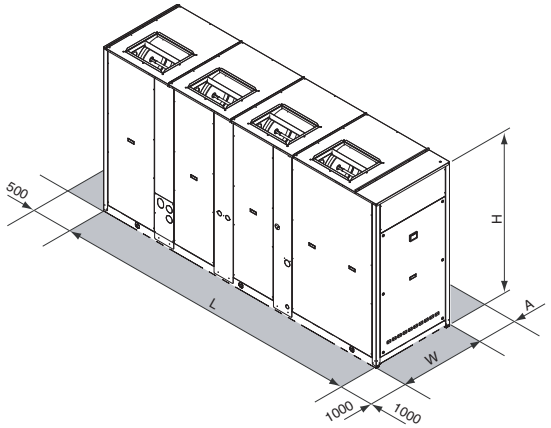
Data declared according to **EN 14511**. The values are referred to units without options and accessories.
EER (Energy Efficiency Ratio) = ratio of the total cooling capacity to the effective power input of the unit
HRE (Heat Recovery Efficiency) = ratio of the total capacity of the system (heating plus cooling capacity) to the effectice power input
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-heatingg

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	1760					1760			2160			2160		mm
A	1600								2000					mm
Operating maximum weight*	1078	1082	1102	1143	1168	1684	1765	1825	2000	2042	2094	2423	2467	kg

* Weight refers to the unit IP with tank and pumping module 2 pumps.

> RGC HE

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

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 (standard for IP)

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