> RVW

WATER-WATER CHILLERS FOR INDOOR INSTALLATION

Available range

Unit type
- IR Chiller
- IW Heat pump (reversible on the water side)
- BR Chiller Brine
- BW Heat pump Brine (reversible on the water side)

Version
- VB Base version
- VD Desuperheater version
- VR Total recovery version

Acoustic setting up
- AB Base setting up
- AS Low noise setting up

Condenser Options
- T cooling tower water
- P well water
- S sea water

Unit description

This range of water-water chillers are designed to meet the climate control and air conditioning needs of large capacity systems in the industrial and commercial sectors. All the units are suitable for indoor installation and can be applied to fan coil plants and radiant floor plants.
Suitable for indoor installation, as standard the units are equipped with 1 or 2 TWIN-SCREW semihermetic compressors mounted on rubber vibration dampers able to modulate the capacity from minimum 25 (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, source side exchanger shell and tube type optimised for R134a with high efficiency grooved tubes complete with Victaulic water connections, fitted inside a shell of thermal insulation material to prevent heat exchange (IW, BW only)
1 or 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).
When developing the range special attention has been paid to the choice of heat exchangers in order to obtain high efficiencies at full loads and partial loads to maximise the seasonal efficiency rating (ESEER) and therefore reduce consumption and running costs
The units can be selected as Base setting up (AB) or as Low noise setting up (AS) that provides that compressor are positioned inside a soundproofed cabin, made with profiles and panels insulated with acoustic material.
The range is completed with numerous accessories and options.
The electronic controller can manage the various condensation control systems of the numerous applications required, enabling the control of 2-way or 3-way modulating valves or the control of pumps under INVERTER. The units can therefore by combined with liquid coolers (dry-coolers), cooling towers, geothermal boreholes or use for water cooling city or well water (condenser option P) or sea water (condenser option S). All the units are carefully built in compliance with the current regulations and individually tested. Installation therefore only requires the electrical and hydraulic connection.

Options

Compressor starting
- standard (contactors)
- soft starter

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

Evaporator flow switch (mounted)
Evaporator insulation higher thickness
Evaporator electrical heater for winter antifreeze
High and low pressure gauges
Compressor suction shut-off valve

Accessories

Rubber vibration dampers
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
Water flow switch

NET NOMINAL performances - Standard plants - EUROVENT certified data

IR		280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
W30W7	Cooling capacity	280	315	353	409	474	532	587	698	812	927	1056	1159	kW
	Power input	62,6	70,4	79,4	91,1	108	120	133	159	182	215	244	263	kW
	EER	**4,47**	**4,48**	**4,45**	**4,49**	**4,40**	**4,42**	**4,41**	**4,38**	**4,45**	**4,30**	**4,33**	**4,41**	**W/W**
	ESEER	**4,83**	**4,77**	**4,78**	**4,83**	**4,84**	**4,79**	**4,84**	**4,82**	**4,90**	**4,83**	**4,86**	**4,87**	**W/W**
	Water flow rate plant side	13,5	15,1	17,0	19,7	22,8	25,6	28,3	33,6	39,1	44,7	50,9	55,8	l/s
	Pressure drops plant side	46	37	46	44	55	43	54	52	45	57	59	45	kPa
	Water flow rate source side	16,3	18,3	20,6	23,8	27,6	31,1	34,3	40,8	47,3	54,2	61,8	67,7	l/s
	Pressure drops source side	29	25	26	28	38	27	25	26	28	38	27	25	kPa
IW		**280.1**	**320.1**	**360.1**	**420.1**	**480.1**	**540.1**	**600.1**	**710.2**	**820.2**	**950.2**	**1100.2**	**1200.2**	
W30W7	Cooling capacity	280	315	353	409	474	532	587	698	812	927	1056	1159	kW
	Power input	62,6	70,4	79,4	91,1	108	120	133	159	182	215	244	263	kW
	EER	**4,47**	**4,48**	**4,45**	**4,49**	**4,40**	**4,42**	**4,41**	**4,38**	**4,45**	**4,30**	**4,33**	**4,41**	**W/W**
	ESEER	**4,83**	**4,77**	**4,78**	**4,83**	**4,84**	**4,79**	**4,84**	**4,82**	**4,90**	**4,83**	**4,86**	**4,87**	**W/W**
	Water flow rate plant side	13,5	15,1	17,0	19,7	22,8	25,6	28,3	33,6	39,1	44,7	50,9	55,8	l/s
	Pressure drops plant side	46	37	46	44	55	43	54	52	45	57	59	45	kPa
	Water flow rate source side	16,3	18,3	20,6	23,8	27,6	31,1	34,3	40,8	47,3	54,2	61,8	67,7	l/s
	Pressure drops source side	29	25	26	28	38	27	25	26	28	38	27	25	kPa
W10W45	Heating capacity	311	350	395	455	534	592	659	783	908	1055	1184	1304	kW
	Power input	72,8	82,7	93,4	104	128	139	155	186	213	256	279	311	kW
	COP	**4,28**	**4,23**	**4,24**	**4,36**	**4,16**	**4,26**	**4,25**	**4,20**	**4,27**	**4,12**	**4,25**	**4,19**	**W/W**
	Water flow rate plant side	14,8	16,7	18,8	21,7	25,4	28,2	31,4	37,3	43,2	50,2	56,4	62,1	l/s
	Pressure drops plant side	24	21	22	23	32	22	21	22	23	33	22	21	kPa
	Water flow rate source side	16,3	18,3	20,6	23,8	27,6	31,1	34,3	40,8	47,3	54,2	61,8	67,7	l/s
	Pressure drops source side	29	25	26	28	38	27	25	26	28	38	27	25	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.**
W30W7 = source : water in 30°C out 35°C / plant : water in 12°C out 7°C
W10W45 = source : water in 10°C / plant : water in 40°C out 45°C

Acoustic performances

Base setting up (AB)	280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
Sound power level (E)	97	97	97	98	98	98	98	99	100	100	100	100	dB(A)
Sound pressure level at 1 meter	79	79	79	80	80	80	80	80	81	81	81	81	dB(A)
Sound pressure level at 5 meters	70	70	70	72	72	72	71	72	73	73	73	73	dB(A)
Sound pressure level at 10 meters	65	65	65	67	67	67	66	67	68	68	68	68	dB(A)
Low noise setting up (AS)	**280.1**	**320.1**	**360.1**	**420.1**	**480.1**	**540.1**	**600.1**	**710.2**	**820.2**	**950.2**	**1100.2**	**1200.2**	
Sound power level (E)	92	93	92	93	93	94	94	94	95	95	96	96	dB(A)
Sound pressure level at 1 meter	74	75	74	75	75	76	76	75	76	76	77	77	dB(A)
Sound pressure level at 5 meters	65	66	65	66	66	67	67	67	68	68	69	69	dB(A)
Sound pressure level at 10 meters	60	61	60	61	61	62	62	62	63	63	64	64	dB(A)

(E): EUROVENT certified data
The acoustic performances are referred to units operating in cooling mode at nominal conditions W30/W7.
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

TECHNICAL DATA	280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
Power supply	400 - 3 - 50												V-ph-Hz
Compressor type	twin-screw												-
N° compressors / N° refrigerant circuits	1 / 1							2 / 2					n°
Part load	25 / 100% continuous							12.5 / 100% continuous					-
Plant side heat exchanger type / N°	shell and tube / 1												-
Source side heat exchanger type / N°	shell and tube / 1							shell and tube / 2					-
IN/OUT Plant hydraulic fittings (victaulic)	DN125	DN125	DN125	DN150	DN150	DN150	DN200	DN150	DN200	DN200	DN200	DN200	-
IN/OUT Source hydraulic fittings (victaulic)	DN100	DN100	DN100	DN100	DN100	DN125	DN125	DN100	DN100	DN100	DN125	DN125	-

Electrical data

Standard unit	280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
FLA - Full load current at maximum tolerated conditions	162	181	211	232	270	309	340	422	464	540	618	680	A
FLI - Full load power input at maximum tolerated conditions	99	110	129	144	169	190	209	257	287	339	380	418	kW
MIC - Maximum instantaneous current of the unit	520	612	665	436	465	586	650	876	668	735	895	990	A

Operative range

		Cooling		Heating		
Temperature	Tipo Unità	min	max	min	max	
Water inlet temperature source side	IR, IW, BR	20 (5*)	50	10	25 (40*)	(°C)
Water outlet temperature plant side	IR, IW	5	15	25	55	(°C)
Water outlet temperature plant side	BR	-8	5	25	55	(°C)
Water outlet temperature Desuperheater (VD)	IR, BR	35	50	-	-	(°C)
Water outlet temperature total Recovery (VR)	IR, BR	25	55	-	-	(°C)

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

CONTROL SYSTEM

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

- Double Set Point
- Demand Limit
- Dinamic set point
- Integrative heating
- Condensation / evaporation control
- Remote stand by
- Remote cooling-heating

VD and VR versions

These units allow to recover the heating power through an additional heat exchanger.

DESUPERHEATERS VERSION VD

Allows the production of cold water as in the base version and, simultaneously, of hot water at temperatures from 35 to 50 °C. This is achieved by inserting, between the compressor and condenser, 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 25 to 55 °C. This is achieved using a suitable heat exchanger that has a double water circuit: one for condensation and a second for heat recovery. The management to the two hydraulic circuits is in charge of the user.

Desupeheater Version (VD) - NET NOMINAL performances

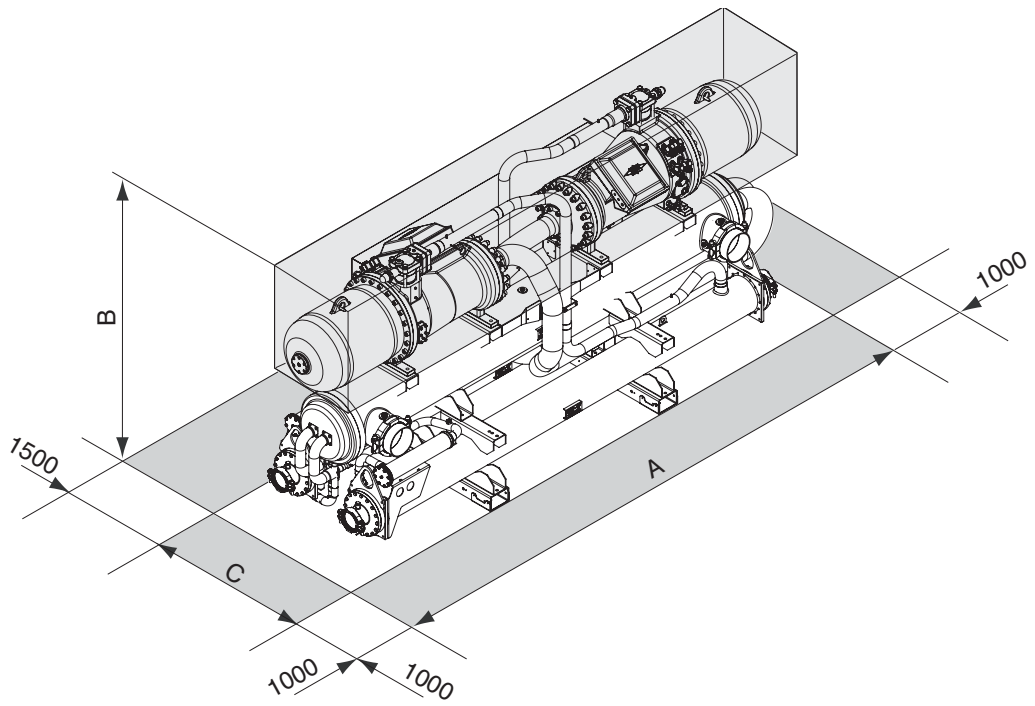
IR	Base setting up (AB)	280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
W30W7 - W45	Cooling capacity	291	328	367	425	493	553	610	725	844	963	1097	1204	kW
	Total power input	61	69	77	89	105	118	130	156	178	210	238	257	kW
	EER	**4,76**	**4,77**	**4,74**	**4,78**	**4,68**	**4,71**	**4,70**	**4,66**	**4,74**	**4,58**	**4,61**	**4,69**	**W/W**
	HRE	**5,65**	**5,67**	**5,63**	**5,68**	**5,56**	**5,60**	**5,59**	**5,55**	**5,64**	**5,45**	**5,49**	**5,59**	**W/W**
	Water flow rate plant side	14,0	15,8	17,7	20,5	23,8	26,6	29,4	35,0	40,6	46,5	53,0	58,0	l/s
	Water pressure drop plant side	50	40	50	48	59	47	58	56	49	62	64	49	kPa
	Water flow rate source side	16,3	18,3	20,6	23,8	27,6	31,1	34,3	40,8	47,3	54,2	61,8	67,7	l/s
	Water pressure drop source side	29	25	26	28	38	27	25	26	28	38	27	25	kPa
	Heating recovery capacity	54,4	61,7	69,1	79,2	92,2	105	115	138	158	184	210	229	kW
	Water flow rate recovery	2,60	2,95	3,30	3,79	4,40	5,02	5,50	6,60	7,57	8,81	10,0	11,0	l/s
	Water pressure drop recovery	6	8	7	10	9	7	9	7	10	9	7	9	kPa

Total Recovery Version (VR) - NET NOMINAL performances

IR	Base setting up (AB)	280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
W30W7 - W45	Cooling capacity	250	281	317	364	426	475	527	625	724	833	943	1039	kW
	Total power input	72	82	92	104	126	138	155	186	210	251	278	308	kW
	EER	**3,47**	**3,45**	**3,44**	**3,49**	**3,39**	**3,44**	**3,40**	**3,37**	**3,44**	**3,32**	**3,39**	**3,38**	**W/W**
	HRE	**7,90**	**7,86**	**7,83**	**7,93**	**7,74**	**7,83**	**7,74**	**7,68**	**7,84**	**7,58**	**7,73**	**7,71**	**W/W**
	Water flow rate plant side	12,0	13,5	15,2	17,5	20,5	22,8	25,3	30,0	34,8	40,1	45,4	49,9	l/s
	Water pressure drop plant side	36	29	37	35	44	34	43	42	36	46	47	36	kPa
	Heating recovery capacity	318	359	404	464	546	607	674	801	925	1072	1208	1332	kW
	Water flow rate recovery	15,2	17,2	19,3	22,2	26,1	29,0	32,2	38,3	44,2	51,2	57,7	63,6	l/s
	Water pressure drop recovery	25	22	23	24	34	24	22	23	24	34	24	22	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
W30W7 - W45 = source : water in 30°C d.b. out 35°C / plant : water in 12°C out 7°C / Recovery : water in 40°C out 45°C

DIMENSIONS - MINIMUM OPERATING AREA - WEIGHT



Modello	280.1	320.1	360.1	420.1	480.1	540.1	600.1	710.2	820.2	950.2	1100.2	1200.2	
A	4084	4084	4084	4084	4084	4114	4114	4320	4463	4463	4463	4463	mm
B	1878	1878	1878	1904	1904	2002	2089	1932	1993	1993	2090	2090	mm
C	1043	1043	1043	1118	1118	1118	1118	1218	1218	1218	1256	1256	mm
Operating maximum weight	1929	1947	1984	2585	2618	2785	3134	3747	5042	5059	5512	5682	kg