

# RVL-I PLUS

## REVERSIBLE HEAT PUMP FOR OUTDOOR INSTALLATION WITH DC INVERTER COMPRESSOR



### > GENERAL FEATURES

This series of air-water heat pumps meets the winter and summer comfort requirements in residential installations, as well as small-mid sized commercial ones.

The unit is suitable for **outdoor installation** and can produce **hot water up to 60°C**. It may be employed in systems with radiant floor, fancoils, radiators and for the indirect production of domestic hot water (DHW) via an external storage tank (not supplied).

The heart of the heat pump consists in the DC inverter compressor offering modulation from 30% to 120% on the rated capacity. High energy efficiency and low noise level are the main qualities of RVL-I PLUS. It can be employed as the only generator in the system, as well as in combination with other energy sources such as backup electric heaters or boiler.

A temperature probe for domestic hot water tank is supplied with the appliance. An external air temperature probe (already installed on the unit) permits the climatic control both in heating and cooling modes.

All the chillers are accurately built and individually tested in the factory. The installation requires only electrical and plumbing connections.

### > REFRIGERANT CIRCUIT

It is contained in a protected compartment to simplify the maintenance operations. A **DC inverter compressor**, twin rotary type, ensures great dynamic balance and reduces vibrations. It is placed on vibration-damping rubber supports and wrapped by a double layer of sound-absorbing material to minimise the noise. Furthermore, the compressor is equipped with crankcase oil heater. The circuit includes a stainless steel brazed **plates heat exchanger** complete with antifreeze heater, electronic expansion valve, 4-way valve, finned coil consisting in copper tubes and aluminium fins, **axial fans with brushless DC motor** complete with safety protection grilles. The variable speed control of the fans permits a correct operation both in case of low outdoor temperatures -in cooling mode- or warm outdoor climate in heating mode.

### > HYDRAULIC CIRCUIT

It is inside in a compartment, protected from the air flow, to simplify the maintenance operations. It comprises an electronic circulator (brushless DC motor), water flow switch, automatic air vent, water pressure gauge, expansion vessel, safety valve, water filter. The plate heat exchanger and water piping are thermally insulated to prevent condensation on the external surfaces and reduce temperature loss.

### > ACCESSORIES

- **ELECTRICAL BOOSTER (BACKUP HEATER BOX)** Suitable for indoor installation, it consists in an electric heating element (3kW, 230V-1-50) mounted inside a painted sheet metal box, complete with electrical control panel. The heat pump uses the booster for integration purposes. It is used also as a backup out of the operational limit conditions or for alarm.
- **RUBBER ANTIVIBRATION DAMPERS**
- **BUFFER TANK** 60-liter tank in painted sheet metal, thermally insulated. The cylinder is included inside a box, which can be positioned below the heat pump.

### > CONTROL SYSTEM

The internal controller manages the inverter system and the correct operation of the compressor. It integrates regulation algorithms based on pre-set climatic curves, which can be selected by the user. It is then possible to handle the DHW circuit, alarm alerts, pump anti-seize cycle and integration with external heating sources. An evolved timer is included for climatic and acoustic comfort program.

The user interface - consisting in a wired panel - permits the operations listed below:

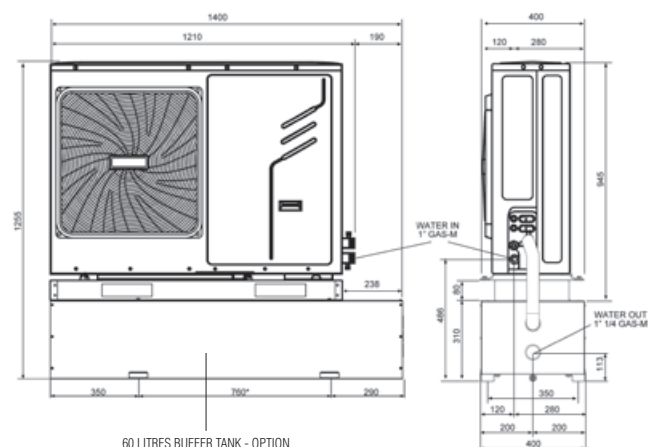
- **HEATING AND COOLING SYSTEM** The unit, when active in heat or cool mode, modulates the frequency of the compressor with the aim to keep system temperature to the setpoint value.
- **DOMESTIC HOT WATER PRODUCTION (DHW)** The unit operates in heating mode to reach and keep the temperature inside a DHW cylinder (not supplied) to the setpoint value. A 3-way diverter valve (not supplied) is needed, together with a temperature sensor (T5 probe, L = 10m, provided) to be inserted into one well of the DHW tank.
- **ADDITIONAL HEATING SOURCES** (boiler or electric heating element). Depending on the parameters set, these sources can intervene as integration of the heat pump, when there is requirement for space heating or for DHW production. The external sources can be automatically switched on, also as a backup, in case the heat pump cannot work for anomaly error or operational temperature limits.
- **ELECTRIC HEATER IN THE DHW TANK** It is possible to handle the electric heating element of the DHW cylinder as an integration/backup or for legionella protection cycle.
- **FAST DHW** This manual function permits to reach DHW setpoint in the shortest time, using all available heating sources.
- **LEGIONELLA PROTECTION** it is possible to set weekly cycles of DHW disinfection, via temperature increase. For this purpose, the heat pump needs energy supplement by heating element inside DHW tank or a boiler.
- **SILENT MODE** Provided the function is enabled, it is possible to schedule up to 2 periods (normally night/rest ones) when the appliance shall operate in low-noise mode. The maximum frequency of the compressor will be thus reduced, together with fan's speed. Acoustic drop rate can be set in 2 levels.
- **REMOTE ON / OFF** using an external contact. The unit can be switched on and off via an external contact.
- **HEATING / COOLING REQUEST** via external contacts. The unit can be activated in heating or cooling mode via two external contacts (eg. room thermostats).
- **ECO/COMFORT** It is possible to define daily time bands and corresponding set point for ECO and COMFORT modes, either in heating or cooling operation.
- **WEEKLY TIMER** Scheduling on 6 time bands per each day of the week, with specification of the operating mode (COOL / HEAT / DHW) and the required setpoint.
- **ANTIFROST PROTECTION** Guaranteed for outdoor air temperature down to -20°C, thanks to the intervention of all the available sources inside the heat pump: the machine operating in heating mode, together with the onboard electric heating element (as a standard on the plate heat exchanger) and the electric booster (if installed).

### REMOTE CONTROLLER (REM CC) AS A STANDARD

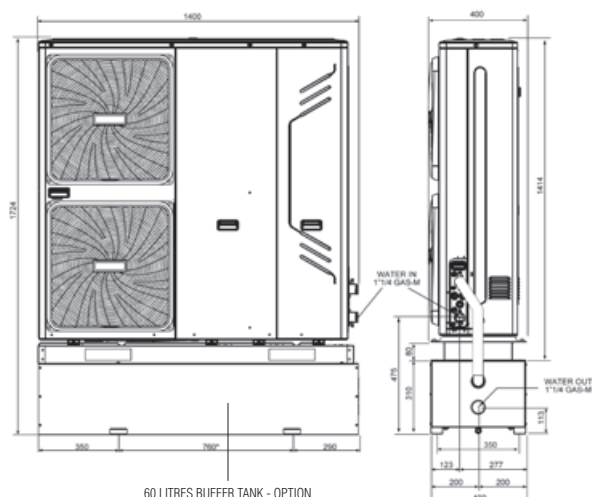


## DIMENSIONS

mod. 5 - 7 - 9

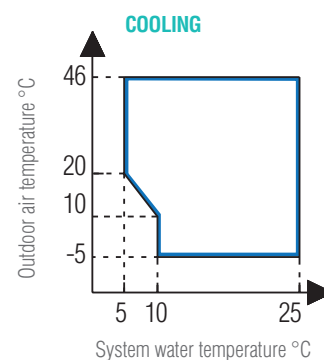
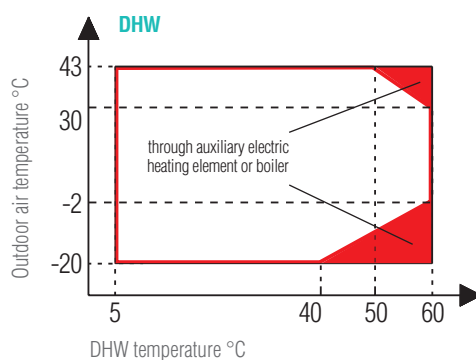
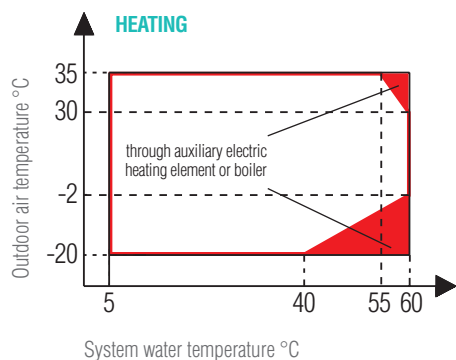


mod. 12 - 12T - 14T - 16T

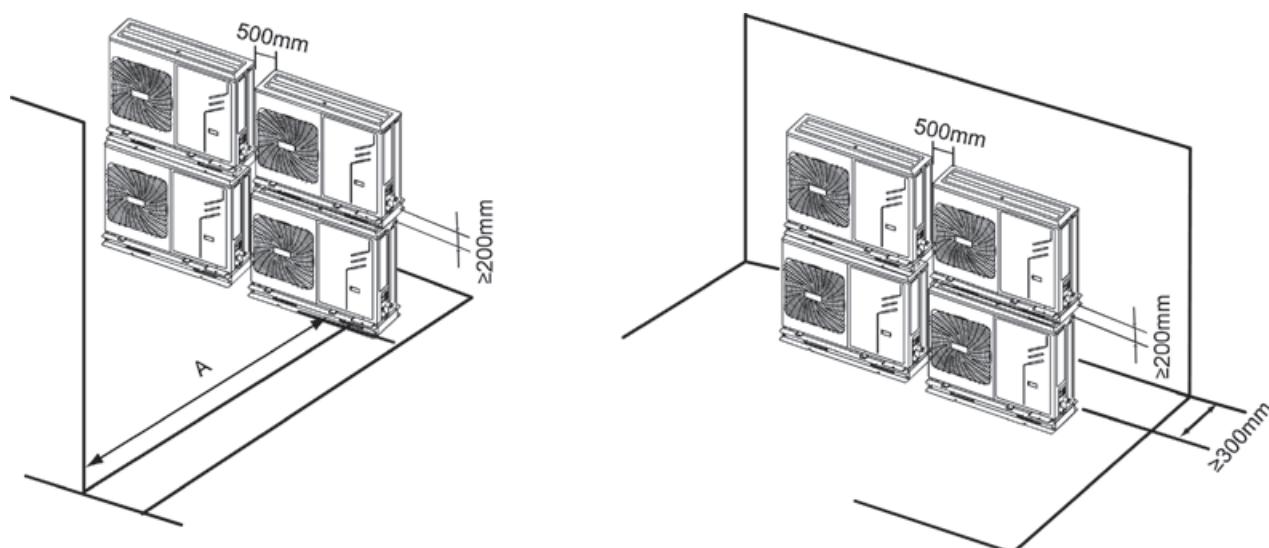


MODEL	5	7	9	12	12T	14T	16T
Package dimensions (mm)	1500x1140x450			1475x1580x440			
Net weight \ Gross weight (kg)	99 / 117			162 / 178	177 / 193	177 / 193	177 / 193

## OPERATION LIMITS

















## MINIMUM CLEARANCE



MODEL	5	7	9	12	12T	14T	16T
A (mm)	1000			1500			

## TECHNICAL DATA

GENERAL DATA		5		7		9		12		12T		14T		16T		
ERP efficiency capacity / Seasonal efficiency (%) medium temperature (water 55°C)	(G - A++ Class)		126		126		127		129		131		128		126	
ERP efficiency capacity / Seasonal efficiency (%) low temperature (water 35°C)	(G - A++ Class)		176		178		163		166		175		168		164	
Power supply	V-ph-Hz	230-1-50									400-3-50		400-3-50			
Compressor type	-	Twin Rotary DC														
N° compressors / N° refrigerant circuits	n°	1/1														
Plant side heat exchanger type	-	stainless steel brazed plates														
Source side heat exchanger type	-	finned coil														
Fans type	-	DC axial														
N° fans	n°	1							2							
Expansion tank volume	l	2							5							
Water safety valve set	bar	3							3							
Hydraulic fittings	"	1"							1-1/4"							
Minimum water content on the system	l	20 (obtainable eventually integrating a buffer tank)														
DHW boiler - minimum surface of the coil	m²	1,4							1,7							
Refrigerant type	-	R410A							R410A							
Refrigerant charge	kg	2,40							3,60							
Control type	-	remote wired														
SWL - Sound power level*	dB(A)	61	65	68	70	70	71	72								
SPL - Sound pressure level at 1mt**	dB(A)	46	50	53	55	55	56	57								
Maximum current input	A	16	16	20	32	16	16	16								

\* SWL = Sound power levels, with reference to 1x10<sup>-12</sup> W. The Total sound power level in dB(A) measured in compliance with ISO 9614 standards. The Total Sound Power in dB(A) the only binding acoustic specification.

\*\* SPL = Sound pressure levels, with reference to 2x10<sup>-5</sup> Pa. The sound pressure levels are values calculated by applying the ISO-3744 relation.

PERFORMANCE DATA				5	7	9	12	12T	14T	16T
A7W35	Heating capacity	W	nom	4600	6600	8600	12170	12370	14100	16300
		W	min-max	1341-5800	1909-7574	2507-9500	3529-12657	3606-14651	4110-16700	4751-19306
	Power input	W	nom	970	1460	2000	2730	2760	3260	3880
		W	min-max	283-1280	420-1957	580-2561	792-3000	799-3876	944-4578	1124-5449
	COP	W/W		4,72	4,52	4,3	4,46	4,48	4,33	4,20
	Water flow rate	l/h		791	1135	1474	2093	2128	2425	2804
A7W45	Heating capacity	W	nom	4700	6700	9200	12580	12020	14100	16060
		W	min-max	1370-5500	1953-7700	2682-9200	3663-13321	3504-12958	4110-15200	4681-17313
	Power input	W	nom	1440	2055	2640	3860	3720	4460	5230
		W	min-max	417-1833	595-2628	764-2636	1118-4451	1078-4371	1293-5241	1516-6146
	COP	W/W		3,27	3,26	3,49	3,26	3,23	3,16	3,07
A35W18	Water flow rate	l/h		808	1152	1577	2164	2067	2425	2762
	Cooling capacity	W	nom	4550	6450	8350	12190	12640	14000	15100
		W	min-max	1320-4921	1872-7000	2423-9100	3538-12357	3668-13362	4063-14800	4382-15963
	Power input	W	nom	1000	1470	2100	2650	2750	3260	3780
		W	min-max	304-1158	445-1719	632-2364	805-2806	837-3038	992-3601	1150-4175
	EER	W/W		4,55	4,39	3,97	4,6	4,6	4,29	4,00
	Water flow rate	l/h		783	1109	1431	2097	2174	2408	2597
A35W7	Cooling capacity	W	nom	4600	6700	8100	12210	12580	13800	15260
		W	min-max	1479-5430	1947-7000	2351-8300	3544-12210	3654-12580	4005-13800	4432-15260
	Power input	W	nom	1560	2570	3520	4170	4320	5150	6410
		W	min-max	527-2011	773-2857	1058-3756	1270-4165	1313-4319	1565-5149	1948-6409
	EER	W/W		2,95	2,61	2,3	2,93	2,91	2,68	2,38
	Water flow rate	l/h		791	1152	1389	2100	2164	2374	2625
CODE (see page 3)				2C09700F	2C09701F	2C09705F	2C09706F	2C09707F	2C09704F	2C09709F

The values are referred to units without options and accessories.

Data declared according to **EN 14511**:

**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 power input of the unit effective

**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

ACCESSORIES	DESCRIPTION
2C0970AF	Electric booster 3kW 230-1-50 for internal installation
2C0970BF	System flow temperature probe 10 mt
2C0970CF	Rubber antivibration kit RVL-I PLUS
2C0970DF	KFI 60 lt buffer tank RVL-I PLUS