



COOL AIR

# Efficiency in its purest state

A new generation of Chillers and Heat Pumps: more efficient, ecological and sustainable

R32

HITECSA

ECSA



**The new R-32 series by Hitecsa** reflect our constant commitment to innovation and research, with the clear aim of contributing to minimizing the environmental impact, achieving significant improvements in efficiency and increasing comfort and well-being.

As a result, the new range of **Chillers and Heat Pumps Kr3, R-32 SERIES,** represents a step forward in climate control with hydronic systems.

Discover the major benefits of this range, "dynamic" and flexible, which uses water as a heat-carrying fluid and an ecological refrigerant to achieve the highest levels of efficiency.

# The "dynamic" flight of the albatross: energy efficiency and savings

Soaring birds can remain in the air for a long time with the minimum effort, and the albatross is a clear example of it. Its secret lies both in its anatomy and its flight technique.

Thanks to its long but narrow wings it can glide through the air during a long time, wasting very little energy, since it does not need to flap them because of a "shoulder blockage" by a special tendon which locks them when they are fully extended.

Besides, this long-distance traveler is known for practicing a flight technique known as "dynamic soaring", which uses the gradient of the wind speed that exists on the surface of the ocean. Taking advantage of the rising currents flowing over the waves, it can soar to a higher altitude and fly for a longer time, thus covering long distances effortlessly.

DID YOU KNOW THAT... The albatross is known for being able to fly thousands of miles in a short period of time, with such a little effort that it can make a complete turn of the Earth in just over a month.

# New range Kr3, R-32 SERIES: more efficient, more sustainable

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#### In compliance with Ecodesign ErP 2021.

The new family of Water to Air Chillers Kr3 represents a step forward in climate control with hydronic systems.

**By incorporating R-32 refrigerant, with a very low GWP** and a lower refrigerant charge, they contribute to reducing the greenhouse effect.

The new Kr3 units, thanks to the integration of this pure and noble gas, together with the use of the most state-of-the-art control systems, have considerably improved their performances with regard to the previous models: higher efficiencies, wider operation limits and a better behavior in severe conditions, as well as higher reliability and durability.



# Why R-32?



75%

LESS IMPACT ON GWP recyclable 100% pure

R-32 is a HFC pure refrigerant gas, with a very low Global Warming Potential (GWP: 677), high efficiencies and a great power of refrigeration.

The EU legislation has established that gases with a high GWP will gradually disappear. The European regulation EC 517/2014 states it is mandatory for all European countries to replace fluorinated gases (F gases) due to environmental reasons and pollution. They are being progressively replaced by R-32, with 0% impact on the ozone layer, higher energy efficiencies, 30% lower charge of refrigerant and 75% less impact on the global warming. The complete transition will take place before the year 2030, but at Hitecsa it is our commitment to act in advance with the aim of always offering leading-edge HVAC solutions, environmentally friendly, with the best energy efficiencies and low GWP refrigerants.

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ENERGY EFFICIENCY

30%

LESS QUANTITY OF REFRIGERANT



#### ENVIRONMENTALLY FRIENDLY

The lower GWP and its higher efficiency contribute to reduce direct greenhouse effect, due to lower CO2 emissions from the electricity production system.

The equipment and facilities carry less refrigerant fluid, so there are fewer emissions of this gas into the atmosphere.

It is an easier fluid to collect, recover and use in other mixes, which contributes to the circular economy.

#### MAXIMUM ECONOMIC SAVINGS

R-32 is a more energy-efficient refrigerant gas in respect to the traditional ones.

R-32 allows to achieve a 13% heating capacity level and a 4% COP rate higher than R-410A. This means that with a lower charge, higher capacities and efficiencies can be obtained.

The lower gas charge of the equipment, per unit of thermal power delivered, means a lower cost that multiplies the mentioned savings.

The greater energy efficiency of this gas has a direct impact on energy consumption, and therefore on the cost of electricity consumption.

As a pure refrigerant, equipment recharging operations and, consequently, maintenance and repair costs are reduced.

The increase that will occur in the demand for R-32 will lead to a consequent decrease in the price, while in the case of the aforementioned HFC, the trend will be the reverse.

R-32 vs R-410A

REFRIGERANT	GWP (AR5)	GWP vs R-410A	Cost Price €/kg	VAT (Spain) €/kg	Capacity vs R-410A	COP vs R-410A	EER vs R-410A	Gas charge vs R-410A
R-410A	1924	-	-	31,31	-	-	-	-
R-32	677	-65%	-25%	10,13	131%	+ 3%	+ 6%	-30%

# New range Kr3, R-32 series: for a more efficient and sustainable comfort



# **SAVINGS**

With R-32, less quantity of refrigerant is needed (30% less than R-410A). Besides, its reduced tax cost, due to a lower GWP than other gases, together with the possibility of allowing direct recharges, make it a very economic refrigerant.

#### **HIGHER ENERGY EFFICIENCY**

R-32 is a more energy-efficient refrigerant gas in respect to the traditional ones.

R-32 allows to achieve a 13% heating capacity level and a 4% COP rate higher than R-410A. This means that with a lower charge, higher capacities and efficiencies can be obtained.

R-32 has a 2.9% cooling capacity level and a 6.4% EER rate higher than R-410A at standard conditions.

R-32 consumes less energy at very low outdoor temperatures.

R-32 allows to obtain A+++ class energy efficiency and it has A2L safety classification, which means very low flammability level and zero toxicity rate.





#### **BETTER PERFORMANCE**

With higher COP and EER rates than other HFC gases, R-32 has optimal thermodynamic properties and very high efficiencies, even at severe external conditions.

# AEROTHERMAL RANGE WITH CAPITAL LETTERS

The ideal solution for

aerothermal

applications on medium-sized areas

Four heat pump models that cover segment from 17 to 38 Kw.

NEW

mini

Management of DHW production in an external storage tank.

Possibility of prioritizing the production of DHW, cold or hot.

Water accumulation at 50° C without electrical support (for DHW in homes).

Open control system with communication through the MODBUS protocol.

Compliance with the ErP 2016/2281 regulation.

Energy Label A+.

HITECSA



**Small Sports Centers** 



Hotels and country guesthouses



Large single-family houses



**Small industries** 

**Wide range of applications**. Designed for use in large-single family houses and small tertiary







**R32** 





TECSA



miniKr3Bi Heat Pump

miniKr3i Cooling only



VEN



Kr3B Heat Pump

Kr3 Cooling only



R-32

 $H_{2}O$ 



Scroll compressors in tandem, specially designed for heat pump applications, allowing wide operation limits.

Axial fans with EC motor and internal thermal protection; protection grids against accidents; proportional electronic device for the adjustment of the rotation speed of the fan (condensation control + evaporation control).



Casing: made of galvanized steel plate and coated with oven polymerized polyester resin (RAL 1013) which provides excellent resistance to corrosion and weather conditions. Electric protection of all the main components by means of magnetothermic relays.

Electronic expansion valves.



#### New control system W-HiReg as standard.

With condensation and evaporation control by using a standard variator, for the management of all complete the components in order to reach the maximum efficiency in all the conditions, a total protection of the elements of the equipment and high capacity of communication.

Modbus as standard: ModBus RS485.

Webserver can be included as standard by means of a connector Ethernet.

Includes master/slave operation function up to 5 units.



#### MAIN BENEFITS

- High efficiency in accordance with the requirements established in the Regulations 813/2013 and 2281/2016 (Ecodesign, ErP Ready). according to ErP21.
- Water as a heat-carrying fluid.
- High performances in all conditions thanks to the optimized design of every component.
- · Asymmetrical tandem of scroll compressors for a maximum partialisation.
- Integration of the **hydronic kit** for an easier installation.
- Modbus as a standard feature.
- Flow switch as a standard feature.
- No vibrations thanks to an internal damping structure for each compressor and installation with dampers in the base frame.
- Easy and safe access to its internal parts by means of hexagonal screws with riveted nut on the panels, the controller display can be accessed by a window and the electrical panel by a hinged door





High capacity of remote communication and monitoring by IoT system Connect Plus by HITECSA which allows a permanent follow-up and register of the parameters and operating conditions, for an easier maintenance.

### TECHNICAL SPECIFICATIONS – miniKr3Bi

MODELS		uKr3Bi 17	uKr3Bi 23	uKr3Bi 30	uKr3Bi 38	
PERFORMANCE			µN130123		un 301 30	
Cooling Capacity (1)	kW	17.7	22.7	30.1	36	
FFR		2.85	2.8	2.8	2.8	
SEER		4.15	4.12	4.13	4.1	
Seasonal cooling energy efficiency / vs. c	%	163	162	162.1	161.1	
Heat output(2)	kW	20.1	27	32.8	38	
СОР		3	3	3,1	3	
Heating Capacity (3)	kW	20,4	27,5	33,4	38,4	
СОР		3,73	3,72	3,8	3,6	
SCOP		3,57	3,55	3,33	3,3	
Seasonal heating energy efficiency / ys, h	%	140	139	130,2	129	
Energy Efficiency Class (5)		A+	A+	A+	A+	
REFRIGERATION CIRCUIT						
Numbers of circuits			:	1		
Number os compressors			1			
Gas base load	kg	4,7	5	5,8	6	
PLATE EXCHANGER						
Water flow	m³/h	3	3,8	5,4	6,1	
Number of exchangers			:	1		
External hydraulic connections (threaded)	Ø (")	DN32 -	1 1/4"	DN32 -	1 1/4"	
EXTERNAL FAN						
Maximun air flow rate	m³/h	12.300	13.800	18.300	18.800	
Number os fans			2	2		
SOUND LEVEL						
Sound level	dBA	77	77	83	84	
Sound level at 5 m (4)	dBA	56	56	61	63	
FUNCTIONAL LIMITS						
Outdoor Cooling Temperature Range	°C		0~	48		
Aoutdoor Heating Temperature Range	°C		-10	~20		
ELECTRICAL DATA						
Power supply (50 Hz ~)			400.3 (sii	n neutro)		
Maximum operating intensity	А	15	18	20	24	
DIMENSIONS AND WEIGHT						
Dimensions (large x wodth x height)	mm	1.810x67	1.810x670x1.334 2.035x634x1.63			
Net weight	kg	380	400	450	460	

NOTES:

(1) AC Application. COOL MODE: External temperature 35°C, Water inlet temperature 12°C, Water outlet temperature 7°C.

(2) IT Application. HEAT MODE: External temperature 7°C B.S. / 6°C B.H., Water inlet temperature 40°C, Water outlet temperature 45°C.

(3) LT Application. HEAT MODE: External temperature 7°C B.S. / 6°C B.H., Water inlet temperature 30°C, Water outlet temperature 35°C.

(4) LpA: sound pressure level with the unit placed on the floor in hemisphere (directivity = 2).

(5) In accordance with Delegated Regulation (UE) 811/2013.



The published pictures may show some optional elements which are not included in the equipment as standard components. Please contact our sales team.



#### **TECHNICAL SPECIFICATIONS – miniKr3Bi**

#### **OPERATING LIMITS**

Maximum water volumes depending on the expansión vessel and max.-min. operating temperature.

INSTALLATION LIMITS		µKr3Bi 17	μKr3Bi 23	μKr3Bi 30	μKr3Bi 38
Nominal water flow	m³/ h	3,0	3,8	5,4	6,1
Minimum water flow	m³/ h	2,2	2,7	3,9	4,4
Maximum water flow	m³/ h	4,3	5,4	7,8	8,8

#### WIDE OPERATING LIMITS





NOTE: DHW production with outside temperatures of up to 40°C

### HYDRAULIC DIAGRAM WITH INERTIAL TANK



INSTALLATION COMPONENTS Inertial tank Electrical heater Valve Actuator 3-way (ON/OFF) TACU tank temperature sensor

### **OPERATING LOGIC**

• The Control regulates capacities in relation to the supply temperature setpoint in standard way.

• The DHW Valve is activated when there is a demand for domestic hot water, determined by the set point programmed in the control unit and by the temperature sensor reading in the DHW tank.

• The electric heater operates when Anti-Legionella protection is activated and stops when the temperature reaches the set point. The timetable at which the protection is activated is programmable..

### TABLE OF OPTIONS. miniKr3 CHILLERS AND HEAT PUMPS

MODELS	µKr3Bi 17	µKr3Bi 23	µKr3Bi 30	µKr3Bi 38
OPTIONS				
Differential pressure switch	٧	٧	٧	٧
Double set point	٧	٧	٧	V
Bacnet IP and Modbus IP protocols	0	0	0	0
Cooling-only unit	0	0	0	0
Corrosion protection of the cooling circuit	0	0	0	0
Exterior coil with anti-corrosion protection treatment	0	0	0	0
Unit without water pump	0	0	0	0
Unit with HP water pump	0	0	0	0
Compressor Acoustic Insulation Cover	0	0	0	0
Pressure transducer at water outlet	0	0	0	0
Electrical power meter	0	0	0	0
Calculation of thermal output and energy efficiency	0	0	0	0
Flow switch	а	а	а	а
Water filter	а	а	а	а
Threaded water connections GAS	а	а	а	а
Inertial tank (ask for capacities)	а	а	а	а
Electric heater in tank (as for capacity)	а	а	а	а
3-way on/off valve + actuator	а	а	а	а
PGD Controller/Command Interface	а	а	а	а
Aquacore management system	А	а	а	а
Management of up to 90 devices: Boss STD	а	а	а	а
Hitecsa ConnectPlus IoT System	а	а	а	а
Anti-vibration mounts	а	а	а	а

In addition to these options, please ask our Commercial Department about any other configuration or function not listed as available.

v = included as standard

o = optional (installed on the unit)

a = accessory (supplied separately)





The published pictures may show some optional elements which are not included in the equipment as standard components.

Please contact our sales team.

### **TECHNICAL SPECIFICATIONS – Kr3B**

MODELS		Kr3B 40	Kr3B 45	Kr3B 55	Kr3B 65	Kr3B 75	Kr3B 85	>>
PERFORMANCE								
Cooling Capacity (1)	КW	42.2	48.5	59.0	65.0	74.0	83.2	
EER		2.90	2.95	2.95	3.01	2.95	2.93	
SEER		4.24	4.33	4.27	4.28	4.25	4.15	
Seasonal cooling energy efficiency / vs. c	%	166.5	170.0	167.7	168.0	167.0	163.0	
		100,0			200,0	207,0	200,0	
Heating Capacity (2)	KW	46,0	53,1	65,0	72,2	82,0	91,8	
COP		2,91	3,00	3,01	3,11	3,14	3,04	
Heating Capacity (3)	KW	48,1	54,8	65,9	74,6	84,5	93,5	
СОР		3,58	3,70	3,60	3,68	3,80	3,63	
SCOP		3,33	3,38	3,50	3,55	3,59	3,56	
Seasonal energy efficiency of heating / ys, h	%	130,0	132,0	136,9	139,0	140,5	139,2	
REFRIGERATION CIRCUIT								
Number of circuits				1	L			
Number of compressors				2	2			
Gas base load	kg	13.8	13.8	14.0	15.0	14.0	18.0	
INDOOR UNIT	0	-,-	- / -	7-	- / -	1-	- / -	
Water flow	m <sup>3</sup> /h	7.9	8.4	10.2	11.2	12.7	14.4	
Number of exchanges	,	. ,2	-, .	,-		,	, .	
Hydraulic connections	Ø (")	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	2	
	<i>p</i> ()	1.1/2	1.1/2	1.1/2	1.1/2	1.1/2	2	
Outdoor air flow rate	$m^3/h$	22 000	22 000	27.000	41 000	41 000	51 800	
Number of fans	111 / 11	32.900	32.900	37.000	41.000	41.000 2	51.800	
		2				2		
		05	05	07	00	00	05	
Sound Output	dBA	85	85	87	88	88	95	
Sound level at 5 m (4)	dBA	63	64	65	66	67	/3	
FUNCTIONAL LIMITS								
Outdoor Cooling Temperature Range	°C			0~	48			
Outdoor Heating Temperature Range	°C			-10	~20			
ELECTRICAL DATA								
Power supply (50 Hz ~)				400.3 (with	out neutral)			
Maximum operating intensity	А	50	55	65	70	75	85	
DIMENSIONS AND WEIGHT								
Dimensions (length x width x height)	mm	2.470 x 1.	190 x 2.120	2.4	70 x 1.190	x 2.120	2.890 x 1.27	5x 2.530
Net weight	kα	600	604	725	720	720	900	
	ъg	009	094	725	730	/50	500	
MODELS	к <u>е</u> <<	Kr3B 100	694 Kr3B 120	725 Kr3B 140	Kr3B 160	Kr3B 190	Kr3B 230	
MODELS PERFORMANCE	к <u></u> <<	Kr3B 100	694 Kr3B 120	725 Kr3B 140	Kr3B 160	Kr3B 190	Kr3B 230	
MODELS PERFORMANCE Cooling Capacity (1)	KW	Kr3B 100 98,2	694 Kr3B 120 118,8	725 Kr3B 140 142,8	Kr3B 160	Kr3B 190	Kr3B 230	
MODELS PERFORMANCE Cooling Capacity (1) EER	Kg << KW	98,2 3,03	694 Kr3B 120 118,8 2,90	142,8 2,92	Kr3B 160 155,0 2,93	<b>Kr3B 190</b> 189,5 2,95	Kr3B 230           232,9           2,88	
MODELS PERFORMANCE Cooling Capacity (1) EER SEER	KW	98,2 3,03 4,25	694 Kr3B 120 118,8 2,90 4,13	725 Kr3B 140 142,8 2,92 4,18	730 Kr3B 160 155,0 2,93 4,15	<b>Kr3B 190</b> 189,5 2,95 4,33	Kr3B 230           232,9           2,88           4,13	
MODELS PERFORMANCE Cooling Capacity (1) EER SEER Seasonal cooling energy efficiency / vs. c	KW %	98,2 3,03 4,25 167,1	694 Kr3B 120 118,8 2,90 4,13 162.0	725 Kr3B 140 142,8 2,92 4,18 164.0	730 Kr3B 160 155,0 2,93 4,15 163.0	730 Kr3B 190 189,5 2,95 4,33 170.0	232,9 2,88 4,13 162.0	
MODELS PERFORMANCE Cooling Capacity (1) EER SEER Seasonal cooling energy efficiency / ys, c Hosting Capacity (2)	KW	98,2 3,03 4,25 167,1	694 Kr3B 120 118,8 2,90 4,13 162,0 130,6	725 Kr3B 140 142,8 2,92 4,18 164,0	730 Kr3B 160 155,0 2,93 4,15 163,0	730 Kr3B 190 189,5 2,95 4,33 170,0 212,0	232,9 2,88 4,13 162,0	
MODELS PERFORMANCE Cooling Capacity (1) EER SEER Seasonal cooling energy efficiency / ys, c Heating Capacity (2)	KW KW KW	685 Kr3B 100 98,2 3,03 4,25 167,1 110,0 2,00	694 Kr3B 120 118,8 2,90 4,13 162,0 129,6	725 Kr3B 140 142,8 2,92 4,18 164,0 159,8	730           Kr3B 160           155,0           2,93           4,15           163,0           177,1	730 Kr3B 190 189,5 2,95 4,33 170,0 212,9 2 22	232,9 2,88 4,13 162,0 252,8	
MODELS PERFORMANCE Cooling Capacity (1) EER SEER Seasonal cooling energy efficiency / ys, c Heating Capacity (2) COP	KW % KW	689 Kr3B 100 98,2 3,03 4,25 167,1 110,0 3,00	694 Kr3B 120 118,8 2,90 4,13 162,0 129,6 2,91	725 Kr3B 140 142,8 2,92 4,18 164,0 159,8 3,00	730 Kr3B 160 2,93 4,15 163,0 177,1 2,96	730 Kr3B 190 189,5 2,95 4,33 170,0 212,9 2,92	Xr3B 230           232,9           2,88           4,13           162,0           252,8           2,90	
MODELS PERFORMANCE Cooling Capacity (1) EER SEER Seasonal cooling energy efficiency / ys, c Heating Capacity (2) COP Heating Capacity (3)	KW KW KW	683 Kr3B 100 98,2 3,03 4,25 167,1 110,0 3,00 112,5	694 Kr3B 120 118,8 2,90 4,13 162,0 129,6 2,91 132,2	725 Kr3B 140 142,8 2,92 4,18 164,0 159,8 3,00 164,1	730 Kr3B 160 155,0 2,93 4,15 163,0 177,1 2,96 181,1	730 Kr3B 190 189,5 2,95 4,33 170,0 212,9 2,92 219,4	xr3B 230           232,9           2,88           4,13           162,0           252,8           2,90           258,0	
MODELS PERFORMANCE Cooling Capacity (1) EER SEER Seasonal cooling energy efficiency / ys, c Heating Capacity (2) COP Heating Capacity (3) COP	kg KW % KW KW	683 Kr3B 100 98,2 3,03 4,25 167,1 110,0 3,00 112,5 3,70	694 Kr3B 120 118,8 2,90 4,13 162,0 129,6 2,91 132,2 3,60	725 Kr3B 140 142,8 2,92 4,18 164,0 159,8 3,00 164,1 3,60	730 Kr3B 160 155,0 2,93 4,15 163,0 177,1 2,96 181,1 3,61	750           Kr3B 190           189,5           2,95           4,33           170,0           212,9           2,92           219,4           3,62	xr3B 230           232,9           2,88           4,13           162,0           252,8           2,90           258,0           3,56	
MODELS PERFORMANCE Cooling Capacity (1) EER SEER Seasonal cooling energy efficiency / ys, c Heating Capacity (2) COP Heating Capacity (3) COP SCOP	KW KW KW	683 Kr3B 100 98,2 3,03 4,25 167,1 110,0 3,00 112,5 3,70 3,58	694           Kr3B 120           118,8           2,90           4,13           162,0           129,6           2,91           132,2           3,60           3,24	725 Kr3B 140 142,8 2,92 4,18 164,0 159,8 3,00 164,1 3,60 3,55	730 Kr3B 160 155,0 2,93 4,15 163,0 177,1 2,96 181,1 3,61 3,45	750           Kr3B 190           189,5           2,95           4,33           170,0           212,9           2,92           219,4           3,62           3,46	xr3B 230           232,9           2,88           4,13           162,0           252,8           2,90           258,0           3,56           3,24	
MODELS PERFORMANCE Cooling Capacity (1) EER SEER Seasonal cooling energy efficiency / ys, c Heating Capacity (2) COP Heating Capacity (3) COP SCOP Seasonal energy efficiency of heating / ys, h	KW KW KW KW	683 Kr3B 100 98,2 3,03 4,25 167,1 110,0 3,00 112,5 3,70 3,58 140,0	694           Kr3B 120           118,8           2,90           4,13           162,0           129,6           2,91           132,2           3,60           3,24           126,5	725 Kr3B 140 142,8 2,92 4,18 164,0 159,8 3,00 164,1 3,60 3,55 139,0	730 Kr3B 160 155,0 2,93 4,15 163,0 177,1 2,96 181,1 3,61 3,45 135,0	730 Kr3B 190 189,5 2,95 4,33 170,0 212,9 2,92 219,4 3,62 3,46 135,4	xr3B 230           232,9           2,88           4,13           162,0           252,8           2,90           258,0           3,56           3,24           126,5	
MODELS PERFORMANCE Cooling Capacity (1) EER SEER Seasonal cooling energy efficiency / ys, c Heating Capacity (2) COP Heating Capacity (3) COP SCOP Seasonal energy efficiency of heating / ys, h REFRIGERATION CIRCUIT	kw KW KW KW	683 Kr3B 100 98,2 3,03 4,25 167,1 110,0 3,00 112,5 3,70 3,58 140,0	694 Kr3B 120 118,8 2,90 4,13 162,0 129,6 2,91 132,2 3,60 3,24 126,5	725 Kr3B 140 142,8 2,92 4,18 164,0 159,8 3,00 164,1 3,60 3,55 139,0	730           Kr3B 160           155,0           2,93           4,15           163,0           177,1           2,96           181,1           3,61           3,45           135,0	730 Kr3B 190 189,5 2,95 4,33 170,0 212,9 2,92 219,4 3,62 3,46 135,4	xr3B 230           232,9           2,88           4,13           162,0           252,8           2,90           258,0           3,56           3,24           126,5	
MODELS PERFORMANCE Cooling Capacity (1) EER SEER Seasonal cooling energy efficiency / ys, c Heating Capacity (2) COP Heating Capacity (3) COP SCOP Seasonal energy efficiency of heating / ys, h REFRIGERATION CIRCUIT Number of circuits	kw KW KW KW	683 Kr3B 100 98,2 3,03 4,25 167,1 110,0 3,00 112,5 3,70 3,58 140,0	694 Kr3B 120 118,8 2,90 4,13 162,0 129,6 2,91 132,2 3,60 3,24 126,5	725 Kr3B 140 142,8 2,92 4,18 164,0 159,8 3,00 164,1 3,60 3,55 139,0	730           Kr3B 160           155,0           2,93           4,15           163,0           177,1           2,96           181,1           3,61           3,45           135,0	730 Kr3B 190 189,5 2,95 4,33 170,0 212,9 2,92 219,4 3,62 3,46 135,4	xr3B 230           232,9           2,88           4,13           162,0           252,8           2,90           258,0           3,56           3,24           126,5	
MODELS PERFORMANCE Cooling Capacity (1) EER SEER Seasonal cooling energy efficiency / ys, c Heating Capacity (2) COP Heating Capacity (3) COP SCOP Seasonal energy efficiency of heating / ys, h REFRIGERATION CIRCUIT Number of circuits Number of compressors	kw KW KW KW	083           Kr3B 100           98,2           3,03           4,25           167,1           110,0           3,00           112,5           3,70           3,58           140,0           1           2	694 Kr3B 120 118,8 2,90 4,13 162,0 129,6 2,91 132,2 3,60 3,24 126,5	725 Kr3B 140 142,8 2,92 4,18 164,0 159,8 3,00 164,1 3,60 3,55 139,0	730         Kr3B 160         155,0         2,93         4,15         163,0         177,1         2,96         181,1         3,61         3,45         135,0	750           Kr3B 190           189,5           2,95           4,33           170,0           212,9           2,92           219,4           3,62           3,46           135,4           2           4	xr3B 230           232,9           2,88           4,13           162,0           252,8           2,90           258,0           3,56           3,24           126,5	
MODELS PERFORMANCE Cooling Capacity (1) EER SER Seasonal cooling energy efficiency / ys, c Heating Capacity (2) COP Heating Capacity (3) COP Seasonal energy efficiency of heating / ys, h REFRIGERATION CIRCUIT Number of circuits Number of compressors Gas base load	kw kw kw kw kw	083           Kr3B 100           98,2           3,03           4,25           167,1           110,0           3,00           112,5           3,70           3,58           140,0           1           2           24.6	694 Kr3B 120 118,8 2,90 4,13 162,0 129,6 2,91 132,2 3,60 3,24 126,5	725 Kr3B 140 142,8 2,92 4,18 164,0 159,8 3,00 164,1 3,60 3,55 139,0 2 x 17,5	xr3B       160         155,0       2,93         4,15       163,0         177,1       2,96         181,1       3,61         3,45       135,0	750           Kr3B 190           189,5           2,95           4,33           170,0           212,9           2,92           219,4           3,62           3,46           135,4           2           4           2 x 24,6	xr3B 230           232,9           2,88           4,13           162,0           252,8           2,90           258,0           3,56           3,24           126,5	
MODELS PERFORMANCE Cooling Capacity (1) EER SEER Seasonal cooling energy efficiency / ys, c Heating Capacity (2) COP Heating Capacity (3) COP SCOP Seasonal energy efficiency of heating / ys, h REFRIGERATION CIRCUIT Number of circuits Number of compressors Gas base load INDOOR UNIT	kw kw kw kw	kr3B 100           98,2           3,03           4,25           167,1           110,0           3,00           112,5           3,70           3,58           140,0           2           24,6	694 Kr3B 120 1118,8 2,90 4,13 162,0 129,6 2,91 132,2 3,60 3,24 126,5	723 Kr3B 140 142,8 2,92 4,18 164,0 159,8 3,00 164,1 3,60 3,55 139,0	Kr3B 160         155,0         2,93         4,15         163,0         177,1         2,96         181,1         3,61         3,45         135,0	750           Kr3B 190           189,5           2,95           4,33           170,0           212,9           2,92           219,4           3,62           3,46           135,4           2           4           2 × 24,6	Kr3B 230           232,9           2,88           4,13           162,0           252,8           2,90           258,0           3,56           3,24           126,5	
MODELS PERFORMANCE Cooling Capacity (1) EER SEER Seasonal cooling energy efficiency / ys, c Heating Capacity (2) COP Heating Capacity (3) COP SCOP Seasonal energy efficiency of heating / ys, h REFRIGERATION CIRCUIT Number of circuits Number of compressors Gas base load INDOR UNIT Water flow	KW KW KW KW KW	Kr3B 100           98,2           3,03           4,25           167,1           110,0           3,00           112,5           3,70           3,58           140,0           2           24,6	694 Kr3B 120 1118,8 2,90 4,13 162,0 129,6 2,91 132,2 3,60 3,24 126,5 21,0 20,5	725         Kr3B 140         142,8         2,92         4,18         164,0         159,8         3,00         164,1         3,60         3,55         139,0         2 x 17,5	Kr3B 160         155,0         2,93         4,15         163,0         177,1         2,96         181,1         3,61         3,45         135,0         2 x 18         28	750           Kr3B 190           189,5           2,95           4,33           170,0           212,9           2,92           219,4           3,62           3,46           135,4           2           4           2 x 24,6	Kr3B 230           232,9           2,88           4,13           162,0           252,8           2,90           258,0           3,56           3,24           126,5           2 x 21	
MODELS PERFORMANCE Cooling Capacity (1) EER SEER Seasonal cooling energy efficiency / ys, c Heating Capacity (2) COP Heating Capacity (3) COP SCOP Seasonal energy efficiency of heating / ys, h REFRIGERATION CIRCUIT Number of circuits Number of compressors Gas base load INDOR UNIT Water flow Number of exchanges	KW KW KW KW kg m <sup>3</sup> /h	Kr3B 100           98,2           3,03           4,25           167,1           110,0           3,00           112,5           3,70           3,58           140,0           2           24,6           16,8	694           Kr3B 120           1118,8           2,90           4,13           162,0           129,6           2,91           132,2           3,60           3,24           126,5           21,0           20,5	723         Kr3B 140         142,8         2,92         4,18         164,0         159,8         3,000         164,1         3,600         3,55         139,00         2 x 17,5         25	Kr3B 160         155,0         2,93         4,15         163,0         177,1         2,96         181,1         3,61         3,45         135,0         2 x 18         28	rsb           Kr3B 190           189,5           2,95           4,33           170,0           212,9           2,92           219,4           3,62           3,46           135,4           2           4           2 x 24,6           32	Kr3B 230           232,9           2,88           4,13           162,0           252,8           2,90           258,0           3,56           3,24           126,5           2 x 21           40	
MODELS PERFORMANCE Cooling Capacity (1) EER Seasonal cooling energy efficiency / ys, c Heating Capacity (2) COP Heating Capacity (3) COP SCOP Seasonal energy efficiency of heating / ys, h REFRIGERATION CIRCUIT Number of circuits Number of compressors Gas base load INDOR UNIT Water flow Number of exchanges Hydraulic connections	KW KW KW KW KW kg m <sup>3</sup> /h	Kr3B 100           98,2           3,03           4,25           167,1           110,0           3,00           112,5           3,70           3,58           140,0           2           24,6           16,8	694 Kr3B 120 1118,8 2,90 4,13 162,0 129,6 2,91 132,2 3,60 3,24 126,5 21,0 20,5	723         Kr3B 140         142,8         2,92         4,18         164,0         159,8         3,000         164,1         3,600         3,55         139,00         2 x 17,5         25         1	Kr3B 160         155,0         2,93         4,15         163,0         177,1         2,96         181,1         3,61         3,45         135,0         2 x 18         28         3	750         Kr3B 190         189,5         2,95         4,33         170,0         212,9         2,92         219,4         3,62         3,46         135,4         2         4         2 x 24,6         32	Kr3B 230           232,9           2,88           4,13           162,0           252,8           2,90           258,0           3,56           3,24           126,5           2 x 21           40           3	
MODELS PERFORMANCE Cooling Capacity (1) EER SEER Seasonal cooling energy efficiency / ys, c Heating Capacity (2) COP Heating Capacity (3) COP SCOP Seasonal energy efficiency of heating / ys, h REFRIGERATION CIRCUIT Number of circuits Number of compressors Gas base load INDOR UNIT Water flow Number of exchanges Hydraulic connections	kg m <sup>3</sup> /h Ø (")	Kr3B 100           98,2           3,03           4,25           167,1           110,0           3,00           112,5           3,70           3,58           140,0           2           24,6           16,8           2	694 Kr3B 120 1118,8 2,90 4,13 162,0 129,6 2,91 132,2 3,60 3,24 126,5 21,0 20,5	723         Kr3B 140         142,8         2,92         4,18         164,0         159,8         3,000         164,1         3,600         3,55         139,00         2 x 17,5         25         1	Kr3B 160         155,0         2,93         4,15         163,0         177,1         2,96         181,1         3,61         3,45         135,0         2 x 18         28         3	750           Kr3B 190           189,5           2,95           4,33           170,0           212,9           2,92           219,4           3,62           3,46           135,4           2           4           2 x 24,6           32	Kr3B 230           232,9           2,88           4,13           162,0           252,8           2,90           258,0           3,56           3,24           126,5           2 x 21           40           3	
MODELS PERFORMANCE Cooling Capacity (1) EER SEER Seasonal cooling energy efficiency / ys, c Heating Capacity (2) COP Heating Capacity (3) COP ScOP Seasonal energy efficiency of heating / ys, h REFRIGERATION CIRCUIT Number of circuits Number of compressors Gas base load INDOR UNIT Water flow Number of exchanges Hydraulic connections OUTDOOR UNIT U	<pre>kg kg m<sup>3</sup>/h Ø (") m<sup>3</sup>/h</pre>	Kr3B 100           98,2           3,03           4,25           167,1           110,0           3,00           112,5           3,70           3,58           140,0           24,6           16,8           2           16,8           2	694 Kr3B 120 1118,8 2,90 4,13 162,0 129,6 2,91 132,2 3,60 3,24 126,5 21,0 20,5 5 5 5 5 5 5 5 5 5 5 5 5 5	723         Kr3B 140         142,8         2,92         4,18         164,0         159,8         3,00         164,1         3,60         3,55         139,0         2 x 17,5         25         2         28,600	Kr3B 160         155,0         2,93         4,15         163,0         177,1         2,96         181,1         3,61         3,45         135,0         2 x 18         28         3         102 500	730         Kr3B 190         189,5         2,95         4,33         170,0         212,9         2,92         219,4         3,62         3,46         135,4         2         4         2 x 24,6         32	xr3B 230           232,9           2,88           4,13           162,0           252,8           2,90           258,0           3,56           3,24           126,5           2 x 21           40           3           121,000	
MODELS PERFORMANCE Cooling Capacity (1) EER SEER Seasonal cooling energy efficiency / ys, c Heating Capacity (2) COP Heating Capacity (3) COP Seasonal energy efficiency of heating / ys, h REFRIGERATION CIRCUIT Number of circuits Number of compressors Gas base load INDOOR UNIT Water flow Number of exchanges Hydraulic connections OUTDOOR UNIT Outdoor air flow rate Number of fore	<pre>kg kg m<sup>3</sup>/h Ø (") m<sup>3</sup>/h</pre>	Kr3B 100           98,2           3,03           4,25           167,1           110,0           3,00           112,5           3,70           3,58           140,0           1           24,6           16,8           2           61.000	694 Kr3B 120 1118,8 2,90 4,13 162,0 129,6 2,91 132,2 3,60 3,24 126,5 21,0 20,5 61.000	723         Kr3B 140         142,8         2,92         4,18         164,0         159,8         3,00         164,1         3,60         3,55         139,0         2 x 17,5         25         88.600	Kr3B 160         Kr3B 160         155,0         2,93         4,15         163,0         177,1         2,96         181,1         3,61         3,45         135,0         2 x 18         28         3         103.500	750         Kr3B 190         189,5         2,95         4,33         170,0         212,9         2,92         219,4         3,62         3,46         135,4         2         2 x 24,6         32         121.900	xr3B 230           232,9           2,88           4,13           162,0           252,8           2,90           258,0           3,56           3,24           126,5           2 x 21           40           3           121.900	
MODELS PERFORMANCE Cooling Capacity (1) EER SEER Seasonal cooling energy efficiency / ys, c Heating Capacity (2) COP Heating Capacity (3) COP SCOP Seasonal energy efficiency of heating / ys, h REFRIGERATION CIRCUIT Number of circuits Number of compressors Gas base load INDOR UNIT Water flow Number of exchanges Hydraulic connections OUTDOOR UNIT Outdoor air flow rate Number of fans COUND LEVEL	kg kg m <sup>3</sup> /h Ø (") m <sup>3</sup> /h	Kr3B 100         98,2         3,03         4,25         167,1         110,0         3,00         112,5         3,70         3,58         140,0         224,6         16,8         26,1000         61.0000         2	694 Kr3B 120 1118,8 2,90 4,13 162,0 129,6 2,91 132,2 3,60 3,24 126,5 21,0 20,5 61.000	723         Kr3B 140         142,8         2,92         4,18         164,0         159,8         3,00         164,1         3,60         3,55         139,0         2 x 17,5         25         88.600	Kr3B 160         155,0         2,93         4,15         163,0         177,1         2,96         181,1         3,61         3,45         135,0         2 x 18         28         103.500	730         Kr3B 190         189,5         2,95         4,33         170,0         212,9         2,92         219,4         3,62         3,46         135,4         2         4         2 x 24,6         32         121.900         4	Kr3B 230         232,9         2,88         4,13         162,0         252,8         2,90         258,0         3,56         3,24         126,5         2 x 21         40         3         121.900	
MODELS PERFORMANCE Cooling Capacity (1) EER SEER Seasonal cooling energy efficiency / ys, c Heating Capacity (2) COP Heating Capacity (3) COP ScOP Seasonal energy efficiency of heating / ys, h REFRIGERATION CIRCUIT Number of circuits Number of compressors Gas base load INDOOR UNIT Water flow Number of exchanges Hydraulic connections OUTDOOR UNIT Outdoor air flow rate Number of fans SOUND LEVEL Seaved Output	kg kw kg m <sup>3</sup> /h Ø (") m <sup>3</sup> /h	Kr3B 100         98,2         3,03         4,25         167,1         110,0         3,00         112,5         3,70         3,58         140,0         224,6         16,8         24,6         16,8         2         61.000         2         2	694 Kr3B 120 1118,8 2,90 4,13 162,0 129,6 2,91 132,2 3,60 3,24 126,5 21,0 20,5 61.000	725       Kr3B 140       142,8       2,92       4,18       164,0       159,8       3,00       164,1       3,60       3,55       139,0       2 x 17,5       25       88.600	Kr3B 160         Kr3B 160         155,0         2,93         4,15         163,0         177,1         2,96         181,1         3,61         3,45         135,0         2 x 18         28         103.500	750         Kr3B 190         189,5         2,95         4,33         170,0         212,9         2,92         219,4         3,62         3,46         135,4         2         4         2 x 24,6         32         121.900         4	Xr3B 230         232,9         2,88         4,13         162,0         252,8         2,90         258,0         3,56         3,24         126,5         2 x 21         40         3         121.900	
MODELS PERFORMANCE Cooling Capacity (1) EER SEER Seasonal cooling energy efficiency / ys, c Heating Capacity (2) COP Heating Capacity (3) COP Seasonal energy efficiency of heating / ys, h REFRIGERATION CIRCUIT Number of circuits Number of compressors Gas base load INDOOR UNIT Water flow Number of exchanges Hydraulic connections OUTDOOR UNIT Outdoor air flow rate Number of fans SOUND LEVEL Sound Output Count Cou	<pre>kg kw kw kw kg m³/h Ø (") m³/h dBA d2:</pre>	Kr3B 100           98,2           3,03           4,25           167,1           110,0           3,00           112,5           3,70           3,58           140,0           224,6           16,8           24,6           16,8           24,6           16,8           24,6           30,00           11,25           140,00           24,6           16,8           24,6           16,8           24,6           16,8           2           96           71	694 Kr3B 120 1118,8 2,90 4,13 162,0 129,6 2,91 132,2 3,60 3,24 126,5 21,0 20,5 61.000 96 75	723         Kr3B 140         142,8         2,92         4,18         164,0         159,8         3,00         164,1         3,60         3,55         139,0         2 × 17,5         25         388.600         94	Kr3B 160         Kr3B 160         155,0         2,93         4,15         163,0         177,1         2,96         181,1         3,61         3,45         135,0         2 x 18         28         103.500         97	750         Kr3B 190         189,5         2,95         4,33         170,0         212,9         2,92         219,4         3,62         3,46         135,4         2         4         2 × 24,6         32         121.900         4         98         77	Kr3B 230         Kr3B 230         232,9         2,88         4,13         162,0         252,8         2,90         258,0         3,56         3,24         126,5         2 x 21         40         3         121.900	
MODELS PERFORMANCE Cooling Capacity (1) EER SEER Seasonal cooling energy efficiency / ys, c Heating Capacity (2) COP Heating Capacity (3) COP ScOP Seasonal energy efficiency of heating / ys, h REFRIGERATION CIRCUIT Number of circuits Number of compressors Gas base load INDOOR UNIT Water flow Number of exchanges Hydraulic connections OUTDOOR UNIT Outdoor air flow rate Number of fans SOUND LEVEL Sound Output Sound level at 5 m (4)	<pre>kg kW kW kW kg m³/h Ø (") m³/h dBA dBA</pre>	Kr3B 100         98,2         3,03         4,25         167,1         110,0         3,00         112,5         3,70         3,58         140,0         224,6         16,8         24,6         16,8         24,6         96         74	694         Kr3B 120         1118,8         2,90         4,13         162,0         129,6         2,91         132,2         3,60         3,24         126,5         21,0         20,5         61.000         96         75	723         Kr3B 140         142,8         2,92         4,18         164,0         159,8         3,00         164,1         3,60         3,55         139,0         2 × 17,5         25         388.600         94         73	Kr3B 160         Kr3B 160         155,0         2,93         4,15         163,0         177,1         2,96         181,1         3,61         3,45         135,0         2 x 18         28         103.500         97         76	730         Kr3B 190         189,5         2,95         4,33         170,0         212,9         2,92         219,4         3,62         3,46         135,4         2         4         2×24,6         32         121.900         4         98         77	Kr3B 230         Kr3B 230         232,9         2,88         4,13         162,0         252,8         2,90         258,0         3,56         3,24         126,5         2 x 21         40         3         121.900         99         77	
MODELS PERFORMANCE Cooling Capacity (1) EER SEER Seasonal cooling energy efficiency / ys, c Heating Capacity (2) COP Heating Capacity (3) COP SCOP Seasonal energy efficiency of heating / ys, h REFRIGERATION CIRCUIT Number of circuits Number of compressors Gas base load INDOR UNIT Water flow Number of exchanges Hydraulic connections OUTDOOR UNIT Outdoor air flow rate Number of fans SOUND LEVEL Sound Output Sound level at 5 m (4) FUNCTIONAL LIMITS	<ul> <li>Ng</li> <li>KW</li> <li>%</li> <li>KW</li> <li>KW</li> <li>KW</li> <li>%</li> <li>g</li> <li>m<sup>3</sup>/h</li> <li>dBA</li> <li>dBA</li> <li>dBA</li> </ul>	Kr3B 100         98,2         3,03         4,25         167,1         110,0         3,00         112,5         3,70         3,58         140,0         24,6         16,8         24,6         16,8         24,6         96         74	694         Kr3B 120         1118,8         2,90         4,13         162,0         129,6         2,91         132,2         3,60         3,24         126,5         21,0         20,5         61.000         96         75	723         Kr3B 140         142,8         2,92         4,18         164,0         159,8         3,00         164,1         3,60         3,55         139,0         2 × 17,5         25         488.600         94         73	730         Kr3B 160         155,0         2,93         4,15         163,0         177,1         2,96         181,1         3,61         3,45         135,0         2 x 18         28         103.500         97         76	750         Kr3B 190         189,5         2,95         4,33         170,0         212,9         2,92         219,4         3,62         3,46         135,4         2         4         2 x 24,6         32         121.900         4         98         77	Kr3B 230         232,9         2,88         4,13         162,0         252,8         2,90         258,0         3,56         3,24         126,5         2 x 21         40         3         121.900         99         77	
MODELS PERFORMANCE Cooling Capacity (1) EER SER Seasonal cooling energy efficiency / ys, c Heating Capacity (2) COP Heating Capacity (3) COP SCOP Seasonal energy efficiency of heating / ys, h REFRIGERATION CIRCUIT Number of circuits Number of compressors Gas base load INDOR UNIT Water flow Number of exchanges Hydraulic connections OUTDOR UNIT Outdoor air flow rate Number of fans SOUND LEVEL Sound Output Sound level at 5 m (4) FUNCTIONAL LIMITS Outdoor Cooling Temperature Range	Ng           KW           %           KW           KW           KW           KW           %           g           m³/h           dBA           dBA           GC	083         Kr3B 100         98,2         3,03         4,25         167,1         110,0         3,00         112,5         3,70         3,58         140,0         24,6         16,8         24,6         16,8         2         61.000         2         96         74	694         Kr3B 120         1118,8         2,90         4,13         162,0         129,6         2,91         132,2         3,60         3,24         126,5         21,0         20,5         61.000         96         75	723         Kr3B 140         142,8         2,92         4,18         164,0         159,8         3,00         164,1         3,60         3,55         139,0         2 × 17,5         25         488.600         94         73         0~	730         Kr3B 160         155,0         2,93         4,15         163,0         177,1         2,96         181,1         3,61         3,45         135,0         2 x 18         28         103.500         97         76	750         Kr3B 190         189,5         2,95         4,33         170,0         212,9         2,92         219,4         3,62         3,46         135,4         2         4         2 x 24,6         32         121.900         4         98         77	Kr3B 230         232,9         2,88         4,13         162,0         252,8         2,90         258,0         3,56         3,24         126,5         2 x 21         40         3         121.900         99         77	
MODELS PERFORMANCE Cooling Capacity (1) EER SER Seasonal cooling energy efficiency / ys, c Heating Capacity (2) COP Heating Capacity (3) COP ScOP Seasonal energy efficiency of heating / ys, h REFRIGERATION CIRCUIT Number of circuits Number of compressors Gas base load INDOR UNIT Water flow Number of exchanges Hydraulic connections OUTDOR UNIT Outdoor air flow rate Number of fans SOUND LEVEL Sound Output Sound level at 5 m (4) FUNCTIONAL LIMITS Outdoor Cooling Temperature Range Outdoor Heating Temperature Range	Ng           KW           %           KW           %           KW           %           g           m³/h           Ø (")           m³/h           dBA           dBA           °C           °C	083         Kr3B 100         98,2         3,03         4,25         167,1         110,0         3,00         112,5         3,70         3,58         140,0         24,6         16,8         24,6         16,8         2         61.000         2         96         74	694         Kr3B 120         1118,8         2,90         4,13         162,0         129,6         2,91         132,2         3,60         3,24         126,5         21,0         20,5         61.000         96         75	723         Kr3B 140         142,8         2,92         4,18         164,0         159,8         3,00         164,1         3,60         3,55         139,0         2 × 17,5         25         488.600         94         73         0~         -10	xr3B 160         155,0         2,93         4,15         163,0         177,1         2,96         181,1         3,61         3,45         135,0         2 x 18         28         3         103.500         97         76         48         ~20	750         Kr3B 190         189,5         2,95         4,33         170,0         212,9         2,92         219,4         3,62         3,46         135,4         2         4         2 x 24,6         32         121.900         4         98         77	Kr3B 230         232,9         2,88         4,13         162,0         252,8         2,90         258,0         3,56         3,24         126,5         2 x 21         40         3         121.900         99         77	
MODELS PERFORMANCE Cooling Capacity (1) ER SER SER Seasonal cooling energy efficiency / ys, c Heating Capacity (2) COP Heating Capacity (3) COP ScOP Seasonal energy efficiency of heating / ys, h REFRIGERATION CIRCUIT Number of circuits Number of compressors Gas base load INDOR UNIT Water flow Number of exchanges Hydraulic connections OUTDOR UNIT Outdoor air flow rate Number of fans SOUND LEVEL Sound Output Sound level at 5 m (4) FUNCTIONAL LIMITS Outdoor Cooling Temperature Range Outdoor Heating Temperature Range ELECTRICAL DATA	Ng           KW           %           KW           KW           KW           %           g           m³/h           Ø (")           m³/h           dBA           dBA           °C           °C           °C	833         Kr3B 100         98,2         3,03         4,25         167,1         110,0         3,00         112,5         3,70         3,58         140,0         224,6         16,8         2         61.000         2         96         74	694         Kr3B 120         1118,8         2,90         4,13         162,0         129,6         2,91         132,2         3,60         3,24         126,5         21,0         20,5         61.000         96         75	723         Kr3B 140         142,8         2,92         4,18         164,0         159,8         3,00         164,1         3,60         3,55         139,0         2 x 17,5         25         488.600         94         73         0~         -10	xr3b       160         155,0       2,93         4,15       163,0         177,1       2,96         181,1       3,61         3,45       135,0         2 x 18       28         3       103.500         97       76         48       ~20	750         Kr3B 190         189,5         2,95         4,33         170,0         212,9         2,92         219,4         3,62         3,46         135,4         2         4         2 x 24,6         32         121.900         4         98         77	Kr3B 230         232,9         2,88         4,13         162,0         252,8         2,90         258,0         3,56         3,24         126,5         2 x 21         40         3         121.900         99         77	
MODELS PERFORMANCE Cooling Capacity (1) EFR SEFR Seasonal cooling energy efficiency / ys, c Heating Capacity (2) COP Heating Capacity (3) COP SCOP Seasonal energy efficiency of heating / ys, h REFRIGERATION CIRCUIT Number of circuits Number of compressors Gas base load INDOR UNIT Water flow Number of exchanges Hydraulic connections OUTDOR UNIT Outdoor air flow rate Number of fans SOUND LEVEL Sound Output Sound level at 5 m (4) FUNCTIONAL LIMITS Outdoor Cooling Temperature Range Outdoor Heating Temperature Range ELECTRICAL DATA Power supply (50 Hz ~)	<pre>kg kw kw kw kw kg m³/h Ø (") m³/h dBA dBA °C °C</pre>	833         Kr3B 100         98,2         3,03         4,25         167,1         110,0         3,00         112,5         3,70         3,58         140,0         224,6         16,8         24,6         16,8         2         96         74	694         Kr3B 120         1118,8         2,90         4,13         162,0         129,6         2,91         132,2         3,60         3,24         126,5         21,0         20,5         61.000         96         75	723         Kr3B 140         142,8         2,92         4,18         164,0         159,8         3,00         164,1         3,60         3,55         139,0         2 x 17,5         25         488.600         94         73         0~         -10         400.3 (with	xr3B 160         155,0         2,93         4,15         163,0         177,1         2,96         181,1         3,61         3,45         135,0         2 x 18         28         103.500         97         76         48         ~20	750         Kr3B 190         189,5         2,95         4,33         170,0         212,9         2,92         219,4         3,62         3,46         135,4         2         4         2 × 24,6         32         121.900         4         98         77	Kr3B 230         232,9         2,88         4,13         162,0         252,8         2,90         258,0         3,56         3,24         126,5         2 x 21         40         3         121.900         99         77	
MODELS PERFORMANCE Cooling Capacity (1) EFR SER SER Seasonal cooling energy efficiency / ys, c Heating Capacity (2) COP Heating Capacity (3) COP SCOP Seasonal energy efficiency of heating / ys, h REFRIGERATION CIRCUIT Number of circuits Number of compressors Gas base load INDOR UNIT Water flow Number of exchanges Hydraulic connections OUTDOR UNIT Outdoor air flow rate Number of fans SOUND LEVEL Sound Output Sound level at 5 m (4) FUNCTIONAL LIMITS Outdoor Cooling Temperature Range ELECTRICAL DATA Power supply (50 Hz ~) Maximum operating intensity	Ng         KW         %         KW         %         KW         %         g(")         m³/h         Ø (")         m³/h         dBA         dBA         °C         °C         °C         °C         A	Kr3B 100         98,2         3,03         4,25         167,1         110,0         3,00         112,5         3,70         3,58         140,0         224,6         16,8         24,6         16,8         2         96         74         906         74	694         Kr3B 120         1118,8         2,90         4,13         162,0         129,6         2,91         132,2         3,60         3,24         126,5         21,0         20,5         61.000         96         75         120	723         Kr3B 140         142,8         2,92         4,18         164,0         159,8         3,00         164,1         3,60         3,55         139,0         2 x 17,5         25         488.600         94         73         0~         -10         400.3 (wither 135,0	Kr3B 160         155,0         2,93         4,15         163,0         177,1         2,96         181,1         3,61         3,45         135,0         2 x 18         28         103.500         97         76         48         20         Dut neutral)         150,0	750         Kr3B 190         189,5         2,95         4,33         170,0         212,9         2,92         219,4         3,62         3,46         135,4         2         4         2 x 24,6         32         121.900         4         98         77         185,0	Kr3B 230         Kr3B 230         232,9         2,88         4,13         162,0         252,8         2,90         258,0         3,56         3,24         126,5         2 x 21         40         3         121.900         99         77         220,0	
MODELS PERFORMANCE Cooling Capacity (1) EER SEER Seasonal cooling energy efficiency / ys, c Heating Capacity (2) COP Heating Capacity (3) COP SCOP Seasonal energy efficiency of heating / ys, h REFRIGERATION CIRCUIT Number of circuits Number of compressors Gas base load INDOR UNIT Water flow Number of exchanges Hydraulic connections OUTDOOR UNIT Outdoor air flow rate Number of fans SOUND LEVEL Sound Output Sound level at 5 m (4) FUNCTIONAL LIMITS Outdoor Cooling Temperature Range Outdoor Heating Temperature Range ELECTRICAL DATA Power supply (50 Hz ~) Maximum operating intensity DIMENSIONS AND WEIGHT	Ng         KW         %         KW         %         KW         %         g(m)         m³/h         Ø(")         m³/h         dBA         dBA         °C         °C         A	Kr3B 100         98,2         3,03         4,25         167,1         110,0         3,00         112,5         3,70         3,58         140,0         2         24,6         16,8         2         96         74         100	694         Kr3B 120         1118,8         2,90         4,13         162,0         129,6         2,91         132,2         3,60         3,24         126,5         21,0         20,5         61.000         96         75         120	723         Kr3B 140         142,8         2,92         4,18         164,0         159,8         3,00         164,1         3,60         3,55         139,0         2 x 17,5         25         488.600         94         73         0~         -10         400.3 (wither 135,0	Kr3B 160         155,0         2,93         4,15         163,0         177,1         2,96         181,1         3,61         3,45         135,0         2 x 18         28         3         103.500         97         76         48         ~20         pout neutral)         150,0	750         Kr3B 190         189,5         2,95         4,33         170,0         212,9         2,92         219,4         3,62         3,46         135,4         2         4         2 x 24,6         32         121.900         4         98         77         185,0	Kr3B 230         232,9         2,88         4,13         162,0         252,8         2,90         258,0         3,56         3,24         126,5         2 x 21         40         3         121.900         99         77         220,0	
MODELS PERFORMANCE Cooling Capacity (1) ER SER Seasonal cooling energy efficiency / ys, c Heating Capacity (2) COP Heating Capacity (3) COP ScOP Seasonal energy efficiency of heating / ys, h REFRIGERATION CIRCUIT Number of circuits Number of compressors Gas base load INDOOR UNIT Water flow Number of exchanges Hydraulic connections OUTDOOR UNIT Outdoor air flow rate Number of fans SOUND LEVEL Sound Output Sound level at 5 m (4) FUNCTIONAL LIMITS Outdoor Cooling Temperature Range ELECTRICAL DATA Power supply (50 Hz ~) Maximum operating intensity DIMENSIONS AND WEIGHT Dimensions (length x width x height)	<pre>kg kw kw kw kw kg m³/h Ø (") m³/h dBA dBA CC CC A mm</pre>	Kr3B 100         98,2         3,03         4,25         167,1         110,0         3,00         112,5         3,70         3,58         140,0         2         24,6         61.000         2         96         74         906         74         100         2.890 x 1.	694         Kr3B 120         1118,8         2,90         4,13         162,0         129,6         2,91         132,2         3,60         3,24         126,5         21,0         20,5         61.000         96         75         120         275x 2.530	723         Kr3B 140         142,8         2,92         4,18         164,0         159,8         3,00         164,1         3,60         3,55         139,0         2 × 17,5         25         488.600         94         73         0~         -10         400.3 (wither         135,0	Kr3B 160         155,0         2,93         4,15         163,0         177,1         2,96         181,1         3,61         3,45         135,0         2 x 18         28         3         103.500         97         76         48         ~20         Dout neutral)         150,0         2.935 x 2.	750         Kr3B 190         189,5         2,95         4,33         170,0         212,9         2,92         219,4         3,62         3,46         135,4         2         4         2 x 24,6         32         121.900         4         98         77         185,0         250x 2.600	Kr3B 230         232,9         2,88         4,13         162,0         252,8         2,90         258,0         3,56         3,24         126,5         2 x 21         40         3         121.900         99         77         220,0	

### TECHNICAL DATA – Kr3B

#### **OPERATING LIMITS**

Maximum water volumes depending on the expansion vessel and max.-min. operating temperature.

INSTALLATION LIMITS		40	45	55	65	75	85	95	120	140	160	190	230
Nominal water flow	m³/ h	7,9	8,4	10,2	11,2	12,7	14,4	16,8	20,5	24,9	27,6	32,4	40,3
Minimum water flow	m³/ h	5,6	6,0	7,3	8,0	9,1	10,3	12,0	14,6	17,8	19,7	23,1	28,8
Maximum water flow	m³/ h	11,2	11,9	14,5	16,0	18,1	20,6	24,0	29,2	35,6	36,0	46,3	57,6
Minimum water volume	1	220	250	320	350	400	400	420	500	500	600	700	800
Expansion vessel	1			18	:			24			50		
Maximum water volume (4-50) <sup>o</sup> C	1			720			980			2.000			
Minimum water volume (4-55) ⁰C	I	610						820			1.6	00	

### WIDE OPERATION LIMITS





#### HYDRAULIC DIAGRAM WITH INERTIAL TANK

FT Water filter



Va

Vc

Non-return valve

Damper valve

# LEGEND

B1/B2	Circulation pump
D	Inertial tank
HEx	Plate heat exchanger
Ma	Water pressure gauge
Ра	Purger
Vd	Drain valve
VEx	Expansion vessel Vs – Safety valve
TAh	Anti-freeze temperature
TEA	Water inlet temperature
TSA	Water outlet temperature
PD	Differential pressure switch

MODELS		40	45	55	65	75	85	95	120	140	160	190	230
OPCTIONS													
HYDRONIC KIT													
Connection type						V	/ictaulic-ty	pe groovi	ng				
Outer connection diameter	"	DN32	- 1 1/4"		DN40 - 1 1/2"			DN50 - 2"		DN80 - 3″			
Expansion vessel volumen	(dm3)			18				24			50		
Inertial tank volume	(dm3)			150				300			500		
PARTIAL HEAT RECOVERY UNIT													
Connection type		-	-	Victaulic-type grooving									
Outer connection diameter	u	-	-	DN	20-3/4″		DN25-1"			DN32-1 1/	/4″	DN40-	1 1/2"

#### TABLE OF OPTIONS. CHILLERS AND HEAT PUMPS Kr3B

	14.00.40	14.00.45		14.00 CE	14.00.75	14.00.05	14.00.05	14.00.400
MODELS	Kr3B 40	Kr3B 45	Kr3B 55	Kr3B 65	Kr3B 75	Kr3B 85	Kr3B 95	Kr3B 120
OPTIONS								
Cooling-only unit	V	V	V	V	V	V	V	V
Anti-Vibration mounts	V	V	V	V	V	V	V	V
Supersilenced version (acoustically isolated lower panels)	V	٧	V	٧	٧	V	٧	V
Soft-start compressors	V	٧	V	٧	٧	V	٧	V
Partial heat recovery unit	V	V	V	V	V	V	V	V
Compressors jacket	V	V	V	V	V	V	V	V
Protection grille for external coils	V	V	V	V	V	V	V	V
Corrosion protection of the cooling circuit	V	V	V	V	V	V	V	V
Outdoor coils with protection treatment	V	V	V	V	V	V	V	V
Variable speed axial fans with EC motor and available pressure	٧	٧	٧	٧	٧	٧	٧	٧
Water filter (accessory for installation on site)	V	٧	V	٧	٧	V	٧	V
Threaded water connections GAS	V	V	V	V	V	V	V	V
Flanged water connection	V	V	V	V	V	V	V	V
Flow switch (accessory for installatin on-site)	V	V	V	V	V	V	V	V
High pressure available water pump		٧	V	٧	٧	V	٧	V
APD water pump and variable speed	V	V	V	V	V	V	V	V
Low pressure available back-up water pump	V	٧	V	٧	٧	V	٧	V
High pressure available back-up water pump		٧	V	٧	٧	V	٧	V
Equipment without water pumps	V	V	V	V	V	V	V	V
Pressure transducer at water outlet	V	٧	V	٧	٧	V	٧	V
Expansion vessel	V	٧	V	٧	٧	V	٧	V
Inertial tank	V	V	V	V	V	V	V	V
Electric heater in tank	V	٧	V	٧	٧	V	٧	V
Partial heat recovery	V	٧	V	٧	٧			
PGD Controller / Command Interface	V	V	V	V	V	V	V	V
Double set point	V	٧	V	٧	٧	V	٧	V
Bacnet IP and Modbus IP protocols	V	٧	V	٧	٧	V	٧	V
Hydrofan Chiller Control	V	٧	V	٧	٧	V	٧	V
Management of up to 90 devices: Boss STD	V	٧	V	٧	٧	V	٧	V
Management of up to 300 devices: Boss Hyper	V	٧	V	٧	٧	V	٧	V
Electrical Power Meter	V	V	٧	V	V	V	V	V
Calculation of thermal power and energy efficiency	V	٧	٧	٧	٧	V	٧	V
IoT Sytem	V	V	٧	V	V	V	V	V

In addition to these options, please consult our Commercial Department for any other configuration or function not described as available.





The published pictures may show some optional elements which are not included in the equipment as standard components.

#### NOTES

Application AC = Water Temperature 12/7°C - Air Temperature 35°C. According to EU regulation 2281/2016
 Application IT = Water Temperature 40/45°C - Air Temperature 7°C BS/ 6 °C BH According to EU regulation 813/2013
 Application LT = Water Temperature 30/35°C - Air Temperature 7°C BS/ 6 °C BH. According to EU regulation 813/2013
 Directivity factor 2: Source radiating in hemisphere (machine on a reflecting surface).

Please contact our sales team.

# Heat Recovery in the Refrigeration Cycle

## HEAT RECOVERY IN THE REFRIGERATION CYCLE

Heat recovery in the refrigeration cycle consists of using the residual heat generated in the cycle itself while the air conditioning is being carried out. Its great advantage lies in the fact that it is integrated into the operation of the equipment, so that its possibilities are used to the maximum.

In those units, this "free" heat is generated in a gas-water heat exchanger incorporated within, and whose operation is in charge of the system itself.

# EFICIENCY IN HEAT RECOVERY

Through this process it is only possible to obtain heat, so it really makes sense to talk about recovery when the equipment is operating in cooling mode.

#### Combined Efficiency =

Cooling Energy + Recovered Heat Consumed Energy

\*In the event that the Heat Pump unit is operating in heating mode, the heat obtained in the recuperator is subtracted from the heat delivered to the installation by the unit.



The Heat of Superheat or Qsc is identified as shown in the graph of the **Mollier Diagram**.

### PARTIAL HEAT RECOVERY

The partial, sensible or desuperheater heat recovery option is achieved by means of a heat exchanger located between the compressor discharge and the external exchanger.

An important part of the heat generated in compression can be used to generate hot water, instead of dissipating it to the environment.



# Heat Recovery in Kr3B units

Partial Heat Recovery in Kr3B airwater heat pump units occurs in an additional refrigerant gaswater heat exchanger (Desuperheater) with electrowelded plates, located in series with the main condenser, which is installed in the line of compressor discharge.

It is also called Sensitive because the discharge gases are cooled without reaching condensation, which must occur in the external exchanger.



- COMPRESSOR 4-WAY VALVE EXPANSION VALVE CHECK VALVE BIDIRECTIONAL FILTER
- LIQUID CONTAINER (does not exist on Cooling Only models) PLATE EXCHANGER
- FINS BATTERY
- AXIAL FAN with EC MOTOR SUCTION ACCUMULATOR

- B. WATER CIRCULATOR PUMP
  VEE. ELECTRONIC EXPANSION VALVE
  PA. HIGH PRESSURE SWITCH
  PD. DIFFERENTIAL PRESSURE SWITCH
  PT. Pressure transducer
  Pur. AIR PURGER
  TAC. COMPRESSOR SUCTION Temperature Probe
  TDS. COMPRESSOR DISCHARGE Temperature Probe
  TEA. INLET Temperature SENSOR

- ➤ TEV. WATER EXHAUST VALVE
- > Vc. EXPANSION VALVE THERMOSTATIC
- > TSA. GATE TEMP PROBE VS. SECURITY VALVE
- > VEx- EXPANSION VESSEL
- > FM FLOWMETER FS - FLOW SWITCH
- > FT WATER FILTER

# Partial Heat Recovery or Desuperheater

### ADVANTAGES OF PARTIAL HEAT RECOVERY

This system entails a series of undeniable advantages, which make its incorporation a wise decision practically whenever there is a simultaneous demand for cooling and heating:

- ✓ The extra cost of the unit that incorporates this system with respect to that of the standard unit is low, and quickly amortized.
- $\checkmark$ It is able to produce hot water in all operating situations.
- ✓ It allows to obtain water at high temperature (up to 70°C).
- ✓ It has very few control requirements and conditions for the installation, since it is the air regulates its operation.
- ✓ It is very easy to combine with the other heat generation systems attached to the unit itself, which makes it very versatile.

### CHARACTERISTICS OF PARTIAL HEAT RECOVERY

A minimum water inlet temperature must be ensured to prevent condensation from occurring in this exchanger, as it could clog the discharge line and damage the compressor.

The unit's control system has a temperature probe at the exchanger inlet and has an output to act on a 3-way valve that prevents the passage of water to the exchanger if its temperature is below 35°C.

The condensing pressure control system incorporated in the unit allows the operating pressures in the external exchanger to be adapted at all times to the workload, both in the main circuit and in the heat recovery circuit.



# Partial Heat Recovery or Desuperheater

#### SELECTION

Partial Heat Recovery is a process subjugated to the main air conditioning process, so a specific demand cannot be exerted on it, but there will be an availability of a greater or lesser energy recovered depending on the working conditions of the main circuit of the equipment.

On the one hand, this recovered energy will depend on the temperature of the water produced. The following graphic shows a trend based on that, in relation to the nominal values.



Outdoor temperature: 35 °C I Thermal jump: 10 °C I Produced water temperature: 7 °C



On the other hand, heat recovery has an additional effect of improving performance, due to the fact that a larger condensation heat exchange area is available, for which improvement coefficients are obtained both in cooling capacity and in the total power absorbed by the unit based on this same superheated water outlet temperature. State-of-the-art control and connectivity systems, flexible and smart, for a safe and efficient comfort

28 7

CONNECT

PLUS

#### **NEW** W-HiReg CONTROL Gama KRONO WEBSERVER INTEGRATED De-O Rhada Funs Pilo Calor Set Regulació 11.13FC **REMOTE CONTROL OF THE UNIT** Int. Regulati TEMPERATURE OPERATION Gama KRONO SETTINGS MODE 0+01 Mode Fund 4 Trie C Calar 00% FLOWS & Set Regulació 11.12°C CIRCUITS PRESSURES Sad Replet Gama KRONC -TIME NOTIFICATIONS & PROGRAMMING ALARMS 10 × 40 10 0 The new HITECSA control system W-HiReg incorporates а Web Server application allowing to Gama KRONO remotely manage the unit from a terminal (computer, Tablet, etc...) 15.7°C \* by means of an Ethernet connection. 8 8

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NEW IOT SYSTEM CONNECT PLUS BY HITECSA

#### **REMOTE CONTROL OF INSTALLATION**

- Units operation
- On/off
- Environmental conditions
- Temperature programming
- Diagnostics and alerts
- Consumptions control

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