

# ZETA 2002/FC

36 - 256 kW



**CE**  
0062

Air/water  
Free Cooling

Water chillers  
self contained

Axial fans and  
scroll compressors

**BLUE**  **BOX**  
c o n d i z i o n a m e n t o



# ZETA 2002 FREE COOLING - Water chiller

Air-cooled water chillers with hermetic scroll compressor and plate evaporator. The units feature a refrigerant circuit for each pair of compressors.

## STRUCTURE

load-bearing frame with removable panels clad internally with expanded polyurethane soundproofing material; constructed in galvanised sheet steel with RAL 5014 powder coating stoved at 180 °C, affording excellent weathering properties. Threaded fasteners in stainless steel.

## COMPRESSORS

hermetic scroll type with orbital motion, connected in tandem and equipped with oil level sight glass, Klixon internal thermal protection and oil equalisation line.

The compressors are housed in a sound insulated compartment and separated from the air flow; access is provided by removable panels which allow maintenance work to be performed in safety even when the unit is in operation.

## CONDENSER

Composed of a high efficiency coil with interpenetrant rows, copper tubes and aluminium fins. The tube core is protected by a metal grille which is installed as part of the standard outfit.

## FAN UNITS

Axial fans directly coupled to a 6 pole motor with internal Klixon overload protection.

Motor protection category is IP 54. The fan is equipped with a safety grille to UNI EN 294.

## EVAPORATOR

Brazed plate type in 316 AISI stainless steel. Thermal insulation is provided by closed cell expanded material.

Each evaporator is equipped with a low water temperature probe for the frost protection system and each unit is equipped with a vane type flow switch as part of the standard outfit.

## REFRIGERANT CIRCUIT

Includes: liquid cock, liquid receiver, charging connection, sight glass, filter/dryer, solenoid valve on liquid line, thermostatic expansion valve equipped with external pressure equalisation.

The high and low pressure values and relative condensation and evaporation temperatures are detected by pressure transducers that relay the signals to the controller so that they can be read directly on the display. The high pressure side of the circuit is equipped with the high pressure switches and relief valves.

## HYDRAULIC CIRCUIT

These components include:

expansion valve, water drain cock, relief valve.

## 3-WAY VALVE

The servo-controlled 3-way valve opens or closes the flow to the water coil

## ELECTRICAL PANEL

The electrical panel includes:

- main switch;
- thermal magnetic circuit-breakers for fans and (if present) pumps; compressor fuses for the power circuit
- compressor contactors
- fans contactors
- pumps contactors (ST version)

microprocessor for control of the following functions:

- water temperature regulation
- no-frost protection
- compressor time intervals
- compressor start sequence automatic rotation

- Free Cooling function:
  - 3-way valve control
  - fan control
- alarm messages
- alarm reset
- cumulative alarm contact for remote signalling
- operating and alarm indicator LEDs

LCD display of the following information:

- water inlet and outlet temperature
- programmed temperature set-point and differential
- alarms description
- compressor operation hour counter
- number of starts of the unit and the compressors
- high and low pressure values and relative condensation and evaporation temperature values.

Electrical power supply [V/f/Hz]: 400/3~/50 ±5%

### **CONTROLS AND SAFETY DEVICES**

- chilled water temperature probe (located at evaporator inlet)
- low water temperature probe at the outlet of each evaporator
- high pressure switch (manual reset)
- low pressure switch (manual reset managed by controller)
- high pressure relief valve
- compressors overtemperature protection
- fans overtemperature protection
- mechanical vane type flow switch supplied as standard on all units.
- Condensation control via SCS (Split Coil System) system for operation at low temperatures

### **TESTING**

The units are factory tested and supplied complete with oil and refrigerant.

## **HYDRAULIC MODULE OPTIONS**

### **ZETA 2002 FC /ST 2PS : unit with tank and pumps.**

In addition to the components of version ZETA 2002 FC this unit includes:

insulated storage tank; two circulator pumps with one in stand-by and automatic changeover in the event of faults; check valves; gate valves, mechanical vane type flow switch.

Version ST is available in an additional four possible configurations:

- ST 1PS : with 1 pump and tank;
- ST 2P : with 2 pumps;
- ST S : with tank;
- ST 1P : with 1 pump.

When the tank is fitted, the length of the ZETA 2002 FC/ST unit is increased by 1 metre with respect to the length of ZETA 2002/FC units; the tank is not available for units 24.4 or 26.4.

## **ACCESSORY VERSIONS**

### **ZETA 2002 FC /LN: low noise unit**

In addition to the components of version ZETA 2002/FC the low noise unit includes:

galvanised sheet steel compressor compartment with full sound insulation using sound absorption material in expanded polyurethane and expanded polyurethane with an intermediate layer of high acoustic impedance material, applied to the sides of the compartment.

## REFRIGERANT CIRCUIT ACCESSORIES:

- **Dual set-point.**

With double thermostatic valves + solenoid valves. On all units two set-points can be programmed, and switching between the two is possible via the keypad or digital input; the type of selection must be specified at the time of order.

Switching of the thermostatic valves is always automatic, in accordance with the water temperature

- **Pressure gauges.**

Available for all models. Note however that the suction and discharge pressure values are read by transducers that relay the results to the controller display.

- **Compressor suction and discharge cocks.**

## HYDRAULIC CIRCUIT ACCESSORIES

- **Outlet water temperature control.**

Available for all models.

- **3-way modulating valve.**

For control of the free cooling output at low air temperatures

## ELECTRICAL ACCESSORIES

- **Serial interface:**

The serial interface is RS485 with Modbus protocol; the following optional protocols are available on request: Carel; Echelon in version RS485 or in version FTT10

- **Power factor correction  $\cos \phi \geq 0.9$**  at nominal operating conditions

- **Single voltage-free contacts for function controls**

- **Set-point variable with remote signal** (0-1V, 0-10V, 0-4mA, 0-20mA).

Available on all models in the range

- **Remote user terminal** (in addition to the standard terminal)

## VARIOUS ACCESSORIES

- **Rubber antivibration mounts.**  
Available for all models in the series
- **Spring type antivibration mounts.**  
Available for models from 18.4 to 26.4
- **Timber crate packing.**
- **Pallet/skid for shipment in a container.**
- **Coil protection grille with metal mesh.**  
Standard equipment on models from 12.2 to 26.4.
- **Anticorrosion treatment of coils for use in aggressive environments.**
- **Non-standard "RAL" finish colours.**

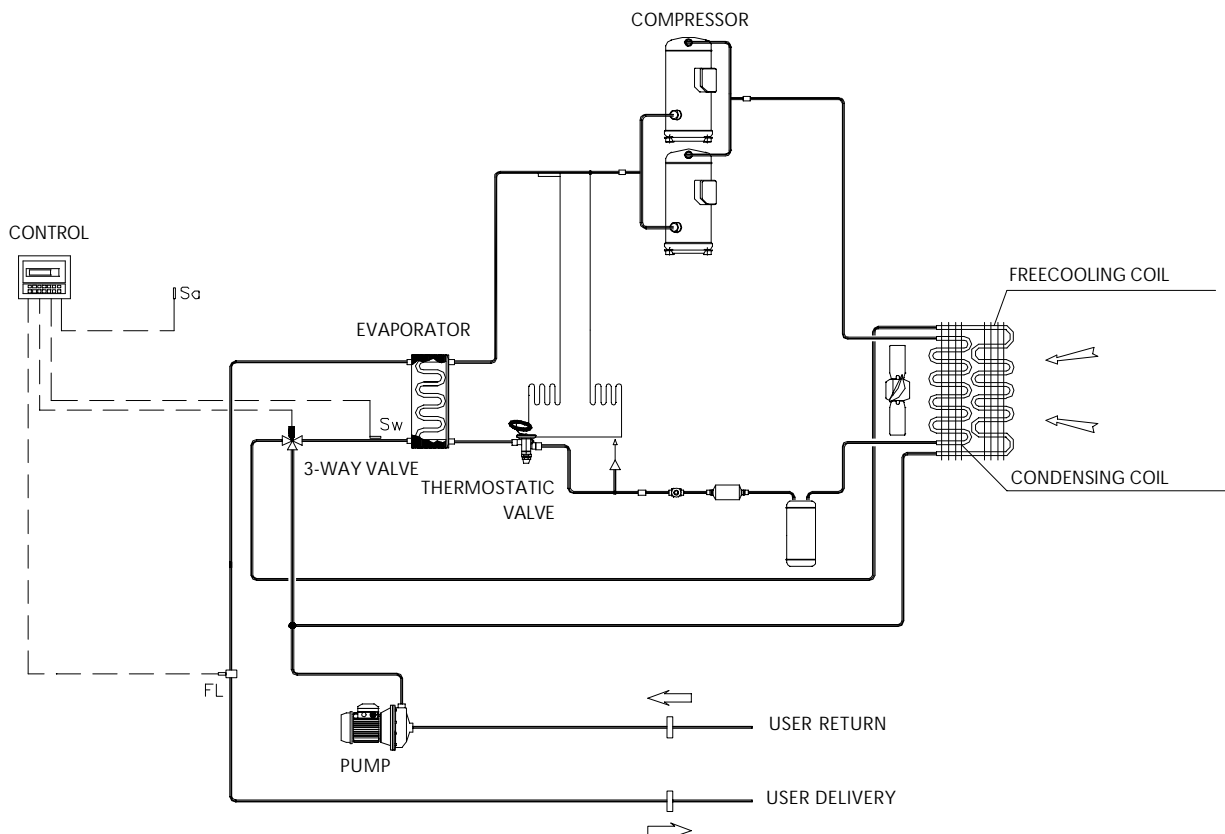
## Free Cooling by Blue Box

### ZETA 2002 Free Cooling water chiller

Blue Box FREE COOLING units have been designed to meet the increasing demands for energy saving and reduce operating costs of chiller machines that operate for extended periods in the year, at ambient temperatures below 10 °C.

With energy saving the priority, the control activates the operating mode that corresponds to readings of the temperature probes on ambient air and reference water.

In fact the Free Cooling coil is placed in series with the plate type evaporator of the cooling circuit, and a servocontrolled 3-way valve enables bypass of the same coil when its efficiency is reduced due to changes in the condition of the ambient air



Another strong point of the Free Cooling range is the SCS (Split Coil System) control that guarantees control of condensation pressure also at low ambient air temperatures without influencing fan air flow, thereby enabling simultaneous operation of the free resource (ambient air) and that provided by the cooling cycle. This minimises the energy spent by the compression system, while guaranteeing the required load.

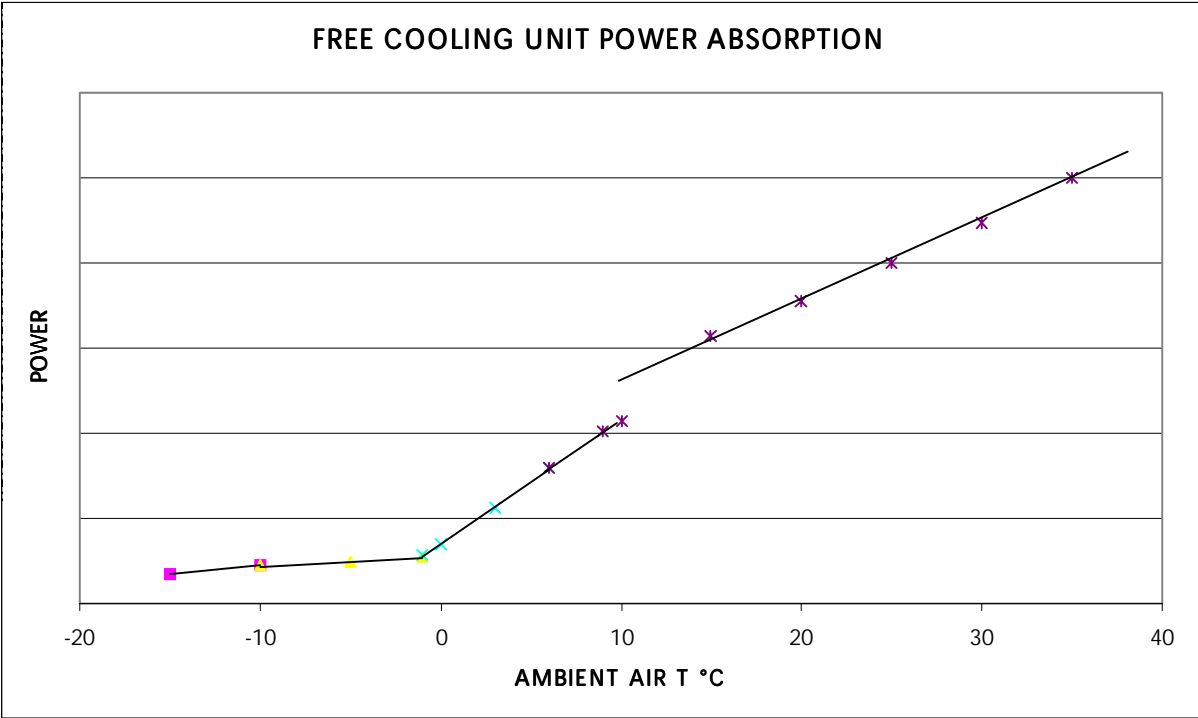
**OPERATION**

**Power absorption according to the ambient air temperature at constant cooling output.**

The graph illustrates the power absorption according to the ambient air temperature while maintaining constant cooling output.

When the ambient conditions allow it, the Free Cooling coil enables cooling of the secondary fluid by means of ambient air, thus reducing use of the compressors when temperatures fall.

In this way, on decrease of the ambient air temperature, the power absorption is reduced accordingly through to use of fans only.



# SERIES

The chillers in the Free Cooling ZETA 2002 FC series are available in various sizes with capacities from 38 a 256 kW in the following models:



- ZETA 2002 FC            cooling only
- ZETA 2002 FC ST      unit with tank and pumps
- ZETA 2002 FC LN      low noise unit

Model designations consist in two numbers:



## ZETA 2002 FC 18.4

Indicates the model \_\_\_\_\_ number of compressors

The model, serial number, characteristics, power supply, etc. are shown by means of decals on the unit.

		Via Enrico Mattei, 20 35028 Piove di Sacco (PD) ITALY Tel. +039.049.9716300	 0 0 6 2
condizionamento			
Modello/Model Modell/Modèle	Matricola/Serial number Matrikel/Matricule		
<input type="text"/>	<input type="text"/>		
Tensione-Fasi-Frequenza Voltage-Phases-Frequency Spannung-Phases-Frequenz Tension-Phases-Fréquence	Tensione circuiti ausiliari Auxiliary circuit voltage Steuerspannung Tension circuits auxiliaires		
<input type="text"/>	<input type="text"/>		
Corrente massima assorbita Max absorbed current Maximalstromverbrauch Courant maxi absorbée	Corrente massima di spunto Max starting current Max. Anlaufstrom Courant maxi démarrage		
<input type="text"/> A	<input type="text"/> A		
Tipo refrigerante Refrigerant type Kältemittel Typ Type de refrigerant	IP quadro elettrico IP electrical board IP E-Schrank IP tableau électrique		
<input type="text"/>	<input type="text"/>		
Numero circuiti refrigerante Refrigerant circuit number Anzahl des Kältemittelkreislaufes Numero circuits refrigerant	Press. massima circuito refriger. Max. Refrigerant circuit pressure Max. Druck Kältekreislauf Pression maxi circuit refrigerant		
<input type="text"/>	<input type="text"/> kPa bar		
Press. massima circuito idraulico Max. Hydraulic circuit pressure Max. Druck im Hydraul. Kreislauf Pression maxi circuit hydraulique	Data di produzione Manufacturing date Erstellungsdatum Date de fabrication		
<input type="text"/> kPa bar	<input type="text"/>		
Carica refrigerante per circuito (kg) / Refrigerant charge per circuit (kg) Kältemittelfüllung Kreislauf (kg) / Charge de refrigerant chaque circuit (kg)			
<input type="text"/> C1	<input type="text"/> C2	<input type="text"/> C3	<input type="text"/> C4

MODELLO MODELE MODEL -TYP  MATRICOLA - MATRICULE SERIAL NO. - SERIENUMMER
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	Via Enrico Mattei, 20 35028 Piove di Sacco (PD) ITALY Tel. +039.049.9716300	 0 0 6 2
condizionamento		
MODELLO - MODELE - MODEL - TYP  MATRICOLA - MATRICULE - SERIAL NO. - SERIENUMMER  REFRIGERANTE - REFRIGERANT - KÄLTEMITTEL - REFRIGERANT		

MODELLO  MATRICOLA  REFRIGERANTE  ESECUZIONE SECONDO NORMATIVE  SCHEMA ELETTRICO  SCHEMA FRIGORIFERO  SCHEMA IDRAULICO  DISEGNO MECCANICO
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# TECHNICAL DATA

## R407C refrigerant

MODEL ZETA 2002 FC		3.2	4.2	5.2	6.2	7.2
<b>Cooling (*)</b>						
Nominal capacity	kW	36,7	43,6	50,2	59,8	66,9
Evaporator water flow rate	l/s	1,92	2,28	2,62	3,12	3,49
	l/h	6.902	8.195	9.426	11.233	12.564
Hydraulic circuit pressure drop	kPa	55,3	77,7	81,6	90,3	85,8
<b>Free Cooling(**)</b>						
Nominal capacity	kW	31,90	33,10	34,00	49,60	50,80
Pressure drop	kPa	65	91	99	102	100
Available pressure (***)	kPa	156	121	164	139	123
<b>Compressors</b>		type	scroll			
Quantity	n	2	2	2	2	2
Refrigerant circuits	n	1	1	1	1	1
Cooling mode input power (*)	kW	11,7	14,4	17,1	18,7	21,7
Capacity steps	%	0-50-100	0-50-100	0-50-100	0-50-100	0-50-100
<b>Condenser cooling fans</b>		type	axial			
Total air flow	m <sup>3</sup> /s	3,94	3,94	3,94	6,00	6,00
	m <sup>3</sup> /h	14.200	14.200	14.200	21.600	21.600
Fan motor power	n x kW	2 x 0,6	2 x 0,6	2 x 0,6	3 x 0,6	3 x 0,6
Nominal speed	RPM	860				
Motor power supply	V/Ph/Hz	230/~ /50				
<b>Refrigerant charge</b>						
Chiller version	kg	1 x 22	1 x 22	1 x 22	1 x 32	1 x 32
<b>Oil</b>						
Oil contents	l	2 x 3,3	2 x 3,25	2 x 3,8	1 x 4 + 1 x 3,8	2 x 4
Oil brand		Maneurop				
Oil type		160 SZ				
<b>Evaporator</b>		type	plate type			
Exchanger water contents	l	3,6	3,6	4,2	4,2	5,2
Water side max. working pressure	bar	30				
<b>Dimensions and weights</b>						
Length	mm	2.233	2.233	2.233	3.234	3.234
Depth	mm	1.180	1.180	1.180	1.281	1.281
Height	mm	1.740	1.740	1.740	1.740	1.740
Shipping weight	kg	819	835	845	1.102	1.120

(\*) Cooling: ambient air temperature 32 °C; water-glycol solution temperature 30% evaporator inlet/outlet 12-7 °C;

(\*\*) Free cooling: ambient air temperature 5 °C; water-glycol solution temperature 30% unit inlet 15 °C.

(\*\*\*) Valid only for units with pumps



# TECHNICAL DATA

## R407C refrigerant

MODEL ZETA 2002 FC		8.2	9.2	10.2	12.2	13.2
<b>Cooling (*)</b>						
Nominal capacity	kW	76,3	90,7	103	116,7	128
Evaporator water flow rate	l/s	3,99	4,73	5,38	6,09	6,68
	l/h	14.346	17.041	19.350	21.924	24.057
Hydraulic circuit pressure drop	kPa	92,2	83,7	64,8	64,5	72,3
<b>Free Cooling (**)</b>						
Nominal capacity	kW	52,1	66,9	68,5	90,9	92,7
Pressure drop	kPa	109,6	107,2	94,3	84,7	96
Available pressure (***)	kPa	125	119	117	141	119
<b>Compressors</b>		type	scroll			
Quantity	n	2	2	2	2	2
Refrigerant circuits	n	1	1	1	1	1
Cooling mode input power (*)	kW	25,6	29,8	35,1	38,2	42,4
Capacity steps	%	0-50-100	0-50-100	0-50-100	0-50-100	0-50-100
<b>Condenser cooling fans</b>		type	axial			
Total air flow	m <sup>3</sup> /s	6	8,861	8,833	12,442	12,442
	m <sup>3</sup> /h	21.600	31.900	31.800	44.790	44.790
Fan motor power	n x kW	3 x 0,6	2 x 2,0	2 x 2,0	3 x 2,0	3 x 2,0
Nominal speed	RPM	860	880	880	880	880
Motor power supply	V/Ph/Hz	230/-/50				
<b>Refrigerant charge</b>						
Chiller version	kg	1 x 32	1 x 32	1 x 32	1 x 45	1 x 46
<b>Oil</b>						
Oil contents	l	2 x 6,6	1 x 8 + 1 x 6,6	2 x 8	2 x 8	2 x 8
Oil brand	Maneurop					
Oil type	160 SZ					
<b>Evaporator</b>		type	plate type			
Exchanger water contents	l	6,3	7,3	8,4	9,4	10,5
Water side max. working pressure	bar	30				
<b>Dimensions and weights</b>						
Length	mm	3.234	3.234	3.234	3.234	3.234
Depth	mm	1.281	1.281	1.281	1.351	1.351
Height	mm	1.740	1.880	1.880	2.380	2.380
Shipping weight	kg	1.142	1.211	1.272	1.532	1.537

(\*) Cooling: ambient air temperature 32 °C; water-glycol mixture temperature 30% evaporator inlet/outlet 12-7 °C;

(\*\*) Free cooling: ambient air temperature 5 °C; water-glycol mixture temperature 30% unit inlet 15 °C.

(\*\*\*) Valid only for units with pumps

# TECHNICAL DATA

## R407C refrigerant

MODEL ZETA 2002 FC		16.4	18.4	20.4	24.4	26.4
<b>Cooling (*)</b>						
Nominal capacity	kW	154,9	181,3	207,4	231,7	256
Evaporator water flow rate	l/s	8,09	9,47	10,83	12,10	13,37
	l/h	29.118	34.081	38.979	43.547	48.114
Hydraulic circuit pressure drop	kPa	71,3	62	71,6	71	81,3
<b>Free Cooling (**)</b>						
Nominal capacity	kW	108,5	120,2	123,5	148,1	159,3
Pressure drop	kPa	77,8	70,5	82,4	87,9	101,3
Available pressure (***)	kPa	97	106	154	125	86
<b>Compressors</b>						
	type	scroll				
Quantity	n	4	4	4	4	4
Refrigerant circuits	n	2	2	2	2	2
Cooling mode input power (*)	kW	50,1	59,7	69,4	77,1	84,9
Capacity steps	%	0-25-50-	0-25-50-	0-25-50-	0-25-50-	0-25-50-
		75-100	75-100	75-100	75-100	75-100
<b>Condenser cooling fans</b>						
	type	axial				
Total air flow	m <sup>3</sup> /s	14,417	16,444	16,444	18,889	20,875
	m <sup>3</sup> /h	51900	59200	59200	68000	75150
Fan motor power	n x kW	3 x 2,0	4 x 2,0	4 x 2,0	4 x 2,0	5 x 2,0
Nominal speed	RPM	880				
Motor power supply	V/Ph/Hz	400/3~/50				
<b>Refrigerant charge</b>						
Chiller version	kg	2 x 30	2 x 30	2 x 30	2 x 38	2 x 38
<b>Oil</b>						
Oil contents	l	4 x 6,6	2 x 8 + 2 x 6,6	4 x 8	4 x 8	4 x 8
Oil brand	Maneurop					
Oil type	160 SZ					
<b>Evaporator</b>						
	type	plate type				
Exchanger water contents	l	6,3	7,3	8,4	9,4	10,5
Water side max. working pressure	bar	30				
<b>Dimensions and weights</b>						
Length	mm	4.234	4.234	4.234	5.234	5.234
Depth	mm	1.351	1.351	1.351	1.351	1.351
Height	mm	2.380	2.380	2.380	2.380	2.380
Shipping weight	kg	1.806	1.960	2.079	2.333	2.363

(\*) Cooling: ambient air temperature 32 °C; water-glycol mixture temperature 30% evaporator inlet/outlet 12-7 °C;

(\*\*) Free cooling: ambient air temperature 5 °C; water-glycol mixture temperature 30% unit inlet 15 °C.

(\*\*\*) Valid only for units with pumps

# TECHNICAL DATA - ELECTRICAL CHARACTERISTICS AND COMPONENTS

## R407C refrigerant

MODEL ZETA 2002		3.2	4.2	5.2	6.2	7.2
Maximum input power <sup>(1)</sup>	kW	17,6	20,6	25,6	29,1	32
	kW	(19,1)	(22,1)	(27,1)	(30,6)	(33,5)
Maximum peak current	A	120,4	155,4	150,4	208,1	218,1
	A	(124,7)	(159,7)	(154,7)	(212,4)	(222,4)
Maximum input current <sup>(2)</sup>	A	39,4	45,4	55,4	68,1	78,1
	A	(43,7)	(49,7)	(59,7)	(72,4)	(82,4)
Fan motor nominal power	n x kW	2 x 0,6	2 x 0,6	2 x 0,6	3 x 0,6	3 x 0,6
Fan motor rated current	n x A	2 x 2,7	2 x 2,7	2 x 2,7	3 x 2,7	3 x 2,7
Pump motor nominal power	kW	(1 x 1,5)	(1 x 1,5)	(1 x 1,5)	(1 x 1,5)	(1 x 1,5)
Pump motor rated current	A	(1 x 4,3)	(1 x 4,3)	(1 x 4,3)	(1 x 4,3)	(1 x 4,3)
Electrical power supply	V/Ph/Hz	400/3N~/50 ±5%				
Control circuits power supply	V/Ph/Hz	230~/50				
Controller power supply	V/Ph/Hz	24/1/50				
Condenser fans power supply	V/Ph/Hz	230~/50				
ST units pumps power supply	V/Ph/Hz	400/3/50				

MODEL ZETA 2002		8.2	9.2	10.2	12.2	13.2
Maximum input power <sup>(1)</sup>	kW	38	45,4	50,6	57,6	62,6
	kW	(39,5)	(47,6)	(52,8)	(59,8)	(64,8)
Maximum peak current	A	218,1	258	273	332	351
	A	(222,4)	(263,3)	(278,3)	(337,3)	(356,3)
Maximum input current <sup>(2)</sup>	A	78,1	93	108	131	150
	A	(82,4)	(98,3)	(113,3)	(136,3)	(155,3)
Fan motor nominal power	n x kW	3 x 0,6	2 x 2,0	2 x 2,0	3 x 2,0	3 x 2,0
Fan motor rated current	n x A	3 x 2,7	2 x 4,0	2 x 4,0	3 x 4,0	3 x 4,0
Pump motor nominal power	kW	(1 x 1,5)	(1 x 2,2)	(1 x 2,2)	(1 x 2,2)	(1 x 2,2)
Pump motor rated current	A	(1 x 4,3)	(1 x 5,3)	(1 x 5,3)	(1 x 5,3)	(1 x 5,3)
Electrical power supply	V/Ph/Hz	400/3N~/50	400/3~/50 ±5%			
Control circuits power supply	V/Ph/Hz	230~/50				
Controller power supply	V/Ph/Hz	24/1/50				
Condenser fans power supply	V/Ph/Hz	230~/50				
ST units pumps power supply	V/Ph/Hz	400/3/50				

(1) electrical power to be available from the mains network when the unit is running.

(2) current at which the unit's internal protections trip. Unit maximum input current. This value is never exceeded and must be used for sizing of the lines and the relative protections (refer to the electrical schematic supplied with the unit).

The values in parentheses refer to ST version units (units with storage tank) and units with pumps only.

# TECHNICAL DATA - ELECTRICAL CHARACTERISTICS AND COMPONENTS

## R407C refrigerant

MODEL ZETA 2002		16.4	18.4	20.4	24.4	26.4
Maximum input power <sup>(1)</sup>	kW	78,4	90,8	101,2	111,2	123,2
	kW	(82,4)	(94,8)	(106,7)	(116,7)	(128,7)
Maximum peak current	A	292	351	381	455	497
	A	(301,5)	(360,5)	(393,0)	(467,0)	(509,0)
Maximum input current <sup>(2)</sup>	A	152	186	216	254	296
	A	(161,5)	(195,5)	(228,0)	(266,0)	(308,0)
Fan motor nominal power	n x kW	3 x 2,0	4 x 2,0	4 x 2,0	4 x 2,0	5 x 2,0
Fan motor rated current	n x A	3 x 4,0	4 x 4,0	4 x 4,0	4 x 4,0	5 x 4,0
Pump motor nominal power	kW	(1 x 4,0)	(1 x 4,0)	(1 x 5,5)	(1 x 5,5)	(1 x 5,5)
Pump motor rated current	A	(1 x 9,5)	(1 x 9,5)	(1 x 12,0)	(1 x 12,0)	(1 x 12,0)
Electrical power supply	V/Ph/Hz	400/3~/50 ±5%				
Control circuits power supply	V/Ph/Hz	230/-/50				
Controller power supply	V/Ph/Hz	24/1/50				
Condenser fans power supply	V/Ph/Hz	230/-/50				
ST units pumps power supply	V/Ph/Hz	400/3/50				

(1) electrical power to be available from the mains network when the unit is running.

(2) current at which the unit's internal protections trip. Unit maximum input current.

This value is never exceeded and must be used for sizing of the lines and the relative protections (refer to the electrical schematic supplied with the unit).

The values in parentheses refer to ST version units (units with storage tank) and units with pumps only.

# SOUND POWER AND PRESSURE LEVELS

## STANDARD UNIT

ZETA 2002 FC	Octave band (Hz)																Total	
	63		125		250		500		1000		2000		4000		8000		dB(A)	
	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp
3.2	96,1	78,8	87,3	70,0	81,2	63,8	79,7	62,4	78,6	61,3	73,2	55,9	69,8	52,4	60,7	43,4	83,0	65,7
4.2	96,5	79,1	87,7	70,3	81,5	64,2	80,0	62,7	78,9	61,6	73,6	56,2	70,1	52,8	61,0	43,7	83,3	66,0
5.2	96,6	79,2	87,8	70,4	81,6	64,3	80,1	62,8	79,0	61,7	73,7	56,3	70,2	52,9	61,1	43,8	83,4	66,1
6.2	98,5	80,6	89,7	71,8	83,6	65,7	82,1	64,2	81,0	63,1	75,6	57,7	72,2	54,3	63,1	45,2	85,4	67,5
7.2	98,8	80,9	90,0	72,1	83,9	66,0	82,4	64,5	81,3	63,4	75,9	58,0	72,5	54,6	63,4	45,5	85,7	67,8
8.2	99,5	81,6	90,7	72,8	84,6	66,7	83,1	65,2	82,0	64,1	76,6	58,7	73,2	55,3	64,1	46,2	86,4	68,5
9.2	100,6	82,7	91,8	73,9	85,7	67,8	84,2	66,3	83,1	65,2	77,7	59,8	74,3	56,4	65,2	47,3	87,5	69,6
10.2	100,8	82,9	92,0	74,1	85,9	68,0	84,4	66,5	83,3	65,4	77,9	60,0	74,5	56,6	65,4	47,5	87,7	69,8
12.2	101,8	83,3	93,0	74,5	86,9	68,4	85,4	66,9	84,3	65,8	78,9	60,4	75,5	57,0	66,4	47,9	88,7	70,2
13.2	101,7	83,2	92,9	74,4	86,8	68,3	85,3	66,8	84,2	65,7	78,8	60,3	75,4	56,9	66,3	47,8	88,6	70,1
16.4	105,3	86,2	96,5	77,4	90,4	71,3	88,9	69,8	87,8	68,7	82,4	63,3	79,0	59,9	69,9	50,8	92,2	73,1
18.4	105,7	86,6	96,9	77,8	90,8	71,7	89,3	70,2	88,2	69,1	82,8	63,7	79,4	60,3	70,3	51,2	92,6	73,5
20.4	106,2	87,1	97,4	78,3	91,3	72,2	89,8	70,7	88,7	69,6	83,3	64,2	79,9	60,8	70,8	51,7	93,1	74,0
24.4	106,6	87,0	97,8	78,2	91,7	72,1	90,2	70,6	89,1	69,5	83,7	64,1	80,3	60,7	71,2	51,6	93,5	73,9
26.4	107,6	88,0	98,8	79,2	92,7	73,1	91,2	71,6	90,1	70,5	84,7	65,1	81,3	61,7	72,2	52,6	94,5	74,9

## LOW NOISE UNITS

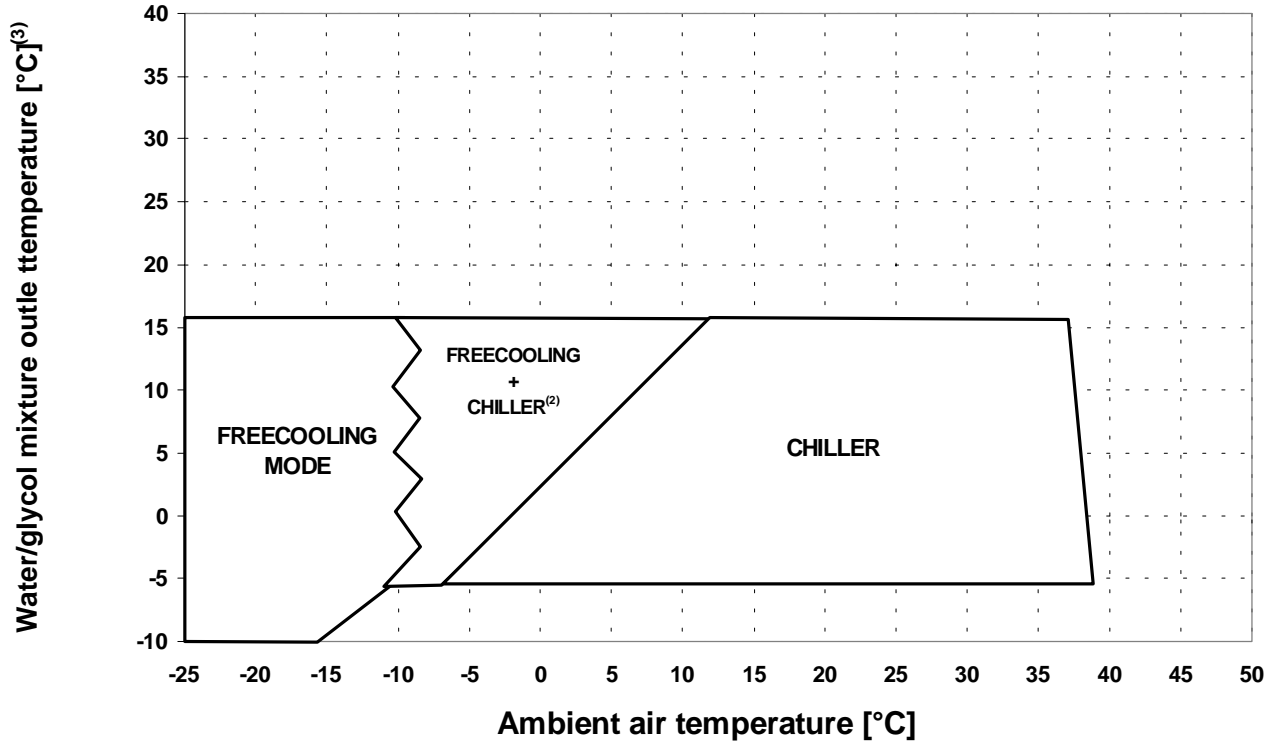
ZETA 2002 FC/LN	Octave band (Hz)																Total	
	63		125		250		500		1000		2000		4000		8000		dB(A)	
	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp
3.2	93,3	76,0	84,5	67,2	78,3	61,1	76,8	59,6	75,7	58,5	70,4	53,1	66,9	49,7	57,8	40,6	80,1	62,9
4.2	93,5	76,2	84,7	67,4	78,5	61,3	77,0	59,8	75,9	58,7	70,6	53,3	67,1	49,9	58,0	40,8	80,3	63,1
5.2	93,7	76,4	84,9	67,6	78,7	61,5	77,2	60,0	76,1	58,9	70,8	53,5	67,3	50,1	58,2	41,0	80,5	63,3
6.2	95,5	77,6	86,7	68,8	80,6	62,7	79,1	61,2	78,0	60,1	72,6	54,7	69,2	51,3	60,1	42,2	82,4	64,5
7.2	95,7	77,8	86,9	69,0	80,8	62,9	79,3	61,4	78,2	60,3	72,8	54,9	69,4	51,5	60,3	42,4	82,6	64,7
8.2	97,6	79,7	88,8	70,9	82,7	64,8	81,2	63,3	80,1	62,2	74,7	56,8	71,3	53,4	62,2	44,3	84,5	66,6
9.2	98,0	80,1	89,2	71,3	83,1	65,2	81,6	63,7	80,5	62,6	75,1	57,2	71,7	53,8	62,6	44,7	84,9	67,0
10.2	98,9	81,0	90,1	72,2	84,0	66,1	82,5	64,6	81,4	63,5	76,0	58,1	72,6	54,7	63,5	45,6	85,8	67,9
12.2	99,0	80,5	90,2	71,7	84,1	65,6	82,6	64,1	81,5	63,0	76,1	57,6	72,7	54,2	63,6	45,1	85,9	67,4
13.2	99,2	80,7	90,4	71,9	84,3	65,8	82,8	64,3	81,7	63,2	76,3	57,8	72,9	54,4	63,8	45,3	86,1	67,6
16.4	103,4	84,3	94,6	75,5	88,5	69,4	87,0	67,9	85,9	66,8	80,5	61,4	77,1	58,0	68,0	48,9	90,3	71,2
18.4	103,4	84,3	94,6	75,5	88,5	69,4	87,0	67,9	85,9	66,8	80,5	61,4	77,1	58,0	68,0	48,9	90,3	71,2
20.4	104,1	85,0	95,3	76,2	89,2	70,1	87,7	68,6	86,6	67,5	81,2	62,1	77,8	58,7	68,7	49,6	91,0	71,9
24.4	105,6	86,0	96,8	77,2	90,7	71,1	89,2	69,6	88,1	68,5	82,7	63,1	79,3	59,7	70,2	50,6	92,5	72,9
26.4	105,4	85,8	96,6	77,0	90,5	70,9	89,0	69,4	87,9	68,3	82,5	62,9	79,1	59,5	70,0	50,4	92,3	72,7

Lw: sound power values measured in open field conditions and calculated in accordance with ISO 3746.

Lp: sound pressure values measured 1 m from the unit in free field conditions in compliance with ISO 3746.

# OPERATING LIMITS

ZETA 2002/FC - R407C refrigerant



1) In continuous operation mode

2) Operation mode with low ambient by Split Coil System (SCS), supplied as standard

3) Minimum glycol concentration (in weight ) 20%