

# technical catalogue

## epsilon cf 5÷39 KW

Water chiller  
air/water

BLUE  BOX  
AIR WITH CARE

# TECHNICAL FEATURES

## Epsilon CF

Air-cooled water chiller with rotary vane compressor for sizes from 5 to 7 and hermetic scroll compressor for sizes from 8.5 to 35; brazed plate type evaporators. The features of the standard units are as follows:

### Unit frame

In galvanized sheet steel with 180°C baked-on epoxy polyester powder coating (colour RAL 5014) to provide a durable weatherproof finish.

### Compressors

Of the rotary vane type (for sizes 5 and 7), internal thermal protection incorporated in the motor windings, and rubber anti-vibration mounts.

Hermetic scroll compressor for sizes from 8.5 to 35, complete with thermal protection incorporated in the motor windings, crankcase heater and rubber anti-vibration mounts. Three-phase power supply models are equipped with a phase sequence relay safety to prevent the compressor from running in reverse.

### Condenser

Composed of a coil with staggered pattern rows of copper tubes and aluminium fins.

A special fin profile and cross-grooved tubes make it possible to extend the operating range to cover high ambient air temperatures. The finned core is protected by a metal grille.

### Fan units

Of the centrifugal type, with double intake and statically and dynamically balanced fan wheel. With directly coupled motor from size 5 to size 15; with belt/pulley transmission coupled to 4-pole three-phase motor from sizes above 20. The fan is equipped with a safety grille in compliance with UNI EN 294.

### Evaporator

Brazed plate type in 316 AISI stainless steel, thermally insulated with closed cell expanded material.

The evaporator is equipped with a freeze protection temperature probe and each unit is equipped as standard with a mechanical flow switch. The use of plate type heat exchangers makes for:

- Improved COP/EER;
- Reduced refrigerant charge in the circuit;
- Reduced unit weight and dimensions;
- Easier maintenance;

### Refrigerant circuit

The circuit includes: charge connection on the liquid and suction line, liquid sight-glass, filter dryer, thermostatic expansion valve with external pressure equalisation, high and low pressure switches, and relief valve.

### Electrical panel

The electrical panel includes:

- Disconnect switch;
- Fuses to protect auxiliary and power circuits;
- Circuit-breaker to protect centrifugal fan motors;
- Compressor contactors;
- Pump contactors/relays (ST version);
- Microprocessor to control the following functions:
  - Water temperature regulation with measurement of inlet temperature;
  - Freeze protection;
  - Compressor time intervals;
  - Alarm signalling;
  - Alarm reset;
  - Volt-free common alarm contact for remote signalling;
  - Digital input for external ON-OFF;
- Volt-free contacts for compressor operation;
- Volt-free general alarm contact.
- ◆ Display of the following information:
  - Inlet and outlet water temperature;
  - Condensing pressure (condensing pressure control accessory on request and HP version);
  - Programmed temperature set-point and differentials;
  - Alarm description codes;
  - Compressor and pump hours counter.

Electrical power supply [V/f/Hz]: 230/1/50±5% for sizes 5 and 07, and 400/3+N~/50 ±5% for sizes from 8.5 to 35.

### Controls and safety devices

- Chilled water temperature probe (at evaporator inlet);
- Freeze protection probe at evaporator outlet that activates freeze protection alarm (with automatic reset and limited trips);
- High pressure switch (with manual/automatic reset);
- Low pressure switch (with automatic reset and limited trips);

- Mechanical flow switch, supplied as standard on all units;
- Condensing pressure control with modulating damper for low ambient temperature operation.

### Testing

Units are factory-tested and shipped complete with refrigerant charge and oil.

## Versions

### EPSILON CF /HP: reverse cycle heat pump

In addition to the components of the basic version, this model includes:

4-way reversing valve, liquid receiver, check valves, second thermostatic valve.

Microprocessor enabled for: summer/winter changeover, automatic defrosting with defrost start/end pressure transducer, digital input for remote summer/winter changeover.

### EPSILON CF /LE : condensing unit

As compared to the basic unit, this model comes without evaporator and thermostatic valve.

The unit is shipped without refrigerant charge and pre-charged with nitrogen.

The unit is in any case equipped with a microprocessor controller interfaced with an external thermostat.

### EPSILON CF /LE/HP : heat pump condensing unit

In addition to the components of the basic Epsilon CF /LE version, this model includes:

4-way reversing valve, liquid receiver, check valves, thermostatic valve.

The following accessories are available: shut-off valves on the suction and liquid lines, two solenoid valves on the liquid line, and a check valve.

The unit is supplied without refrigerant.

All versions of the unit are equipped with a microprocessor controller interfaced with an external thermostat for summer/winter changeover from a digital input and automatic defrosting with defrost start/end pressure transducer.

### Hydraulic module options

### EPSILON CF /ST 1PS : unit with storage tank and pump

In addition to the components of the basic version, this model includes:

insulated storage tank, circulating pump with gate valve, expansion tank (standard on HP version only), air bleed valve, hydraulic circuit drain valve, relief valve (set at 3 bar, corresponding to the maximum permissible working pressure).

## Accessories

### Refrigerant circuit accessories

- High and low pressure gauges;
- Liquid receivers (standard for HP versions);
- Compressor suction and discharge shut-off valves;
- Liquid line valve;
- Liquid line solenoid valve.

### Hydraulic circuit accessories

- Evaporator anti-freeze heater;
- Anti-freeze kit (for ST1 PS version), complete with evaporator anti-freeze heater, electric heater on the piping and on the pump volute, immersion heater in the storage tank;
- Expansion tank (version ST 1PS only, standard for HP version);
- Automatic filling unit (version ST 1PS only)

### Electrical accessories

- RS485 serial interface;
- Remote user terminal panel (in addition to the on-board terminal);
- Summer/winter mode selection on digital input;
- Remote on/off from digital input.

### Miscellaneous accessories

- Rubber anti-vibration mounts;
- Copper/copper condensing coil;
- Copper/tinned copper condensing coil;
- Pre-painted aluminium condensing coil;
- Condensing coil with passivation treatment of the aluminium and polyurethane based coating. The treatment is composed of a double coating the first of which is an aluminium passivating primer while the second is a polyurethane-based topcoat. The product features excellent corrosion resistance and is able to withstand almost all adverse weather and atmospheric conditions. Suitable for installation in marine, rural, industrial and urban surroundings;
- Condensate drain pan (version HP and LE/HP only);
- Metal grille to protect the finned core;
- Non-standard "RAL" paint colours.

The unit is factory-tested and shipped complete with oil and refrigerant charge.

# TECHNICAL DATA STANDARD UNIT



UNIT SIZE		5	7	8.5	10	12.5
<b>COOLING (*)</b>						
Nominal capacity	kW	4,6	6,4	8,1	10,1	12,3
Evaporator water flow	l/h	797	1095	1397	1727	2099
Basic version pressure drop	kPa	34,1	36,4	28,8	35,9	36,6
<b>HEATING (**)</b>						
Nominal capacity	kW	4,9	7,0	9,2	11,3	13,4
<b>COMPRESSORS</b>	<b>type</b>	<b>rotary vane type</b>		<b>scroll</b>		
Quantity	n	1	1	1	1	1
Refrigerant circuits	n	1	1	1	1	1
Power consumption cooling (*)	kW	1,7	2,3	2,9	3,3	4,1
Power consumption heating (**)	kW	1,3	2,1	3,1	3,6	4,4
Capacity steps	%	100/0	100/0	100/0	100/0	100/0
<b>FANS</b>	<b>type</b>	<b>centrifugal</b>				
Air flow	m <sup>3</sup> /h	3750	3750	3750	6000	6000
<b>VERSION ST 1PS</b>						
External available pressure	kPa	77	71	74	149	136
Tank capacity	l	40	40	40	60	60
<b>BASIC UNIT SIZES AND WEIGHTS</b>						
Length	mm	1150	1150	1150	1250	1250
Width	mm	602	602	602	778	778
Height	mm	1102	1102	1102	1102	1102
Operating weigh	kg	106	118	133	179	182

  

UNIT SIZE		15	20	25	30	35
<b>COOLING (*)</b>						
Nominal capacity	kW	14,5	19,10	25,60	33,90	38,80
Evaporator water flow	l/h	2495	3285	4397	5814	6675
Basic version pressure drop	kPa	32,9	49,8	43,8	39,8	36,9
<b>HEATING (**)</b>						
Nominal capacity	kW	16,4	19,9	28,5	37,2	43,2
<b>COMPRESSORS</b>	<b>type</b>	<b>scroll</b>				
Quantity	n	1	1	1	1	1
Refrigerant circuits	n	1	1	1	1	1
Power consumption cooling (*)	kW	4,9	6,2	8,7	10,9	12,8
Power consumption heating (**)	kW	5,1	6,4	8,9	11,3	13,3
Capacity steps	%	100/0	100/0	100/0	100/0	100/0
<b>FANS</b>	<b>type</b>	<b>centrifugal</b>				
Air flow	m <sup>3</sup> /h	6000	8000	8000	14500	17000
<b>VERSION ST 1PS</b>						
External available pressure	kPa	125	117	90	170	161
Tank capacity	l	60	60	60	165	165
<b>BASIC UNIT SIZES AND WEIGHTS</b>						
Length	mm	1250	1550	1550	1750	1750
Width	mm	778	795	795	1025	1025
Height	mm	1102	1102	1102	1270	1270
Operating weigh	kg	190	233	279	496	509

(\*) ambient air temperature 35°C; evaporator inlet/outlet water temperature 12-7 °C

(\*\*) ambient air temperature 8°C BS, 70 UR; condenser inlet/outlet water temperature 40-45 °C

# ELECTRICAL DATA STANDARD UNIT



ELECTRIC CHARACTERISTICS		5	7	8.5	10	12.5
Maximum absorbed power (1)	kW	2,38 (2,68)	3,18 (3,48)	4,78 (5,08)	6,04 (6,34)	7,14 (7,44)
Maximum starting current	A	44,8 (47,0)	70,8 (73,0)	40,8 (43,0)	48,3 (50,5)	59,3 (61,5)
Full load current (2)	A	14,1 (16,3)	19,1 (21,3)	15,1 (17,3)	14,6 (16,8)	16,8 (19,0)
Fan motor nominal power	n x kW	1 x 0,515	1 x 0,515	1 x 0,515	1 x 1,1	1 x 1,1
Fan motor nominal absorbed current	n x A	1 x 3,8	1 x 3,8	1 x 3,8	1 x 3,3	1 x 3,3
Pump motor nominal power	n x kW	1 x 0,30	1 x 0,30	1 x 0,30	1 x 0,30	1 x 0,30
Pump motor nominal current	n x A	1 x 1,36	1 x 1,36	1 x 1,36	1 x 1,36	1 x 1,36
Power supply	V/ph/Hz	230/1~/50 ±5%	230/1~/50 ±5%	400/3N~/50 ±5%	400/3N~/50 ±5%	400/3N~/50 ±5%
Control power supply	V/ph/Hz	230/1~/50	230/1~/50	230/1~/50	230/1~/50	230/1~/50

ELECTRIC CHARACTERISTICS		15	20	25	30	35
Maximum absorbed power (1)	kW	8,24 (8,54)	9,30 (9,75)	13,30 (13,75)	18,10 (19,00)	18,90 (19,80)
Maximum starting current	A	72,3 (74,5)	100,6 (103,4)	122,6 (125,4)	157,1 (159,5)	176,2 (178,6)
Full load current (2)	A	17,8 (20,0)	19,6 (22,4)	27,6 (30,4)	36,1 (38,5)	36,2 (38,6)
Fan motor nominal power	n x kW	1 x 1,1	1 x 1,1	1 x 1,1	1 x 3	1 x 5,5
Fan motor nominal absorbed current	n x A	1 x 3,3	1 x 2,6	1 x 2,6	1 x 7,1	1 x 11,90
Pump motor nominal power	n x kW	1 x 0,30	1 x 0,45	1 x 0,45	1 x 0,45	1 x 0,45
Pump motor nominal current	n x A	1 x 1,36	1 x 2,04	1 x 2,04	1 x 2,04	1 x 2,04
Power supply	V/ph/Hz	400/3N~/50 ±5%	400/3N~/50 ±5%	400/3N~/50 ±5%	400/3N~/50 ±5%	400/3N~/50 ±5%
Control power supply	V/ph/Hz	230/1~/50	230/1~/50	230/1~/50	230/1~/50	230/1~/50

(1) mains power supply to allow unit operation

(2) maximum current before safety cut-outs stop the unit. This value is never exceeded and must be used to size the electrical supply cables and relevant safety devices (refer to electrical wiring diagram supplied with the unit).

Values in brackets refer to ST version units.