

PHOENIX FREE-COOLING



Air-cooled water chillers with Freecooling system featuring double screw semihermetic compressors. Cooling capacity 187 - 494 kW.



Benefits

- Maximum exploitation of free cooling and maximum energy efficiency of the system with respect to conventional solutions, thanks to the independence of the coils in terms of air handling;
- Accurate control of water outlet temperature (including at low temperatures - down to -15 °C), thanks to the use of a modulating three-way water valve;
- Generous sizing of coils for free-cooling;
- Version SSF featuring extremely quiet operation;
- Individually tested in a test chamber like all MTA components and products;
- User friendly control section with simple readout and graphic display;
- Simple to install and maintain, easily accessible components.

Main Options

- Compressor housings for acoustic insulation (for C only, standard on other versions);
- Condensing section electronic fan speed regulation;
- Electronic thermostatic valve (special);
- Electrical protection by means of automatic cut-outs;
- Metal mesh protection filters for coils;
- Anti-vibration dampers kit;
- Replicated remote user terminal kit;
- Supervisor kits.

Standard Features

- Twin screw compressors with crankcase heater and oil level control;
- Part winding start for reduced current spikes;
- Compressor suction and discharge valves;
- Shell and tube evaporator;
- Independent refrigeration circuits;
- Axial fans with sickle-shaped blades;
- 3-way modulating water valve for Free-Cooling (managed by microprocessor control) and internal hydraulic connections to the machine;
- Total Free-Cooling from approximately 10 °C below the water outlet temperature;
- Water differential pressure switch on evaporator;
- High and low pressure transducers;
- Electronic expansion valve with external equalisation, refrigerant filter, sight glass, solenoid valve on liquid line;
- Safety valve;
- Microprocessor control with advanced software ensuring optimum control in all conditions;
- Main switch;
- Protection grade IP54;
- SSF fitted silencers, flexible tubing and compressor vibration damping;
- Environmentally friendly refrigerants with R407C zero ozone depletion potential;
- All the units are delivered with a phase monitor which provides protection against phase loss and phase reversal.

Versions

- **C** - basic acoustic configuration;
- **SC** - low noise acoustic configuration;
- **SF** - low noise acoustic configuration for high ambient temperature;
- **SSF** - very low noise acoustic configuration;
- **Low ambient air temperature** - down to -15 °C.



| Model PH FC | | 0801 | 0901 | 1101 | 1251 | 1401 | 1602 | 1702 | 1802 | 2002 | 2202 | |
|--------------------|---|------|------|------|------|------|------|------|------|------|------|------|
| Free-Cooling OFF | Cooling capacity (1) | kW | 187 | 218 | 264 | 306 | 362 | 373 | 395 | 412 | 468 | 494 |
| | Absorbed power (1) | kW | 68 | 79 | 93 | 105 | 119 | 136 | 151 | 165 | 176 | 195 |
| | Max external air temperature vers. C (1) | °C | 43 | 43 | 42 | 44 | 44 | 43 | 42 | 40 | 41 | 39 |
| | Max external air temperature vers. SF (1) | °C | 45 | 46 | 46 | 46 | 44 | 43 | - | - | - | - |
| TOTAL Free-Cooling | Cooling capacity (1) | kW | 187 | 218 | 264 | 306 | 362 | 373 | 395 | 412 | 468 | 494 |
| | Absorbed power (1)[*] | kW | 6 | 8 | 8 | 10 | 12 | 12 | 12 | 12 | 14 | 14 |
| | Total freecooling (1) | °C | -0,2 | -1,6 | -2,0 | -0,6 | 0,1 | -0,2 | -0,8 | -1,3 | -0,6 | -1,3 |
| Free-Cooling OFF | Cooling capacity (2) | kW | 170 | 198 | 239 | 278 | 329 | 339 | 360 | 376 | 425 | 449 |
| | Absorbed power (2) | kW | 65 | 75 | 88 | 101 | 114 | 130 | 144 | 158 | 167 | 185 |
| | Max external air temperature vers. C (2) | °C | 45 | 44 | 44 | 45 | 45 | 45 | 43 | 42 | 43 | 41 |
| | Max external air temperature vers. SF (2) | °C | 46 | 47 | 47 | 48 | 45 | 45 | - | - | - | - |
| TOTAL Free-Cooling | Cooling capacity (2) | kW | 170 | 198 | 239 | 278 | 329 | 339 | 360 | 376 | 425 | 449 |
| | Absorbed power (2)[*] | kW | 6 | 8 | 8 | 10 | 12 | 12 | 12 | 12 | 14 | 14 |
| | Total freecooling (2) | °C | -2,1 | -3,4 | -3,7 | -2,4 | -1,8 | -2,1 | -2,7 | -3,1 | -2,4 | -3,0 |
| ESEER | - | 3,44 | 3,72 | 3,63 | 3,6 | 3,98 | 3,48 | 3,62 | 3,65 | 3,55 | 3,42 | |

| Power supply | V/Ph/Hz | 400 ± 10% / 3-PE / 50 | | | | | | | | | |
|---|---------|-----------------------|------|------|------|------|------|------|------|------|------|
| Circuit / Compressors | N° | 1/1 | 1/1 | 1/1 | 1/1 | 1/1 | 2/2 | 2/2 | 2/2 | 2/2 | 2/2 |
| Sound pressure Free-cooling OFF - C (3) | dB(A) | 62,0 | 63,2 | 62,6 | 63,6 | 65,0 | 65,5 | 65,6 | 65,7 | 66,9 | 66,9 |
| Sound pressure Free-cooling OFF - SC (3) | dB(A) | 55,4 | 56,3 | 56,0 | 57,0 | 59,0 | 59,1 | 59,3 | 59,4 | 60,5 | 60,6 |
| Sound pressure Free-cooling OFF - SF (3) | dB(A) | 55,7 | 56,1 | 56,3 | 57,2 | 59,1 | 59,2 | - | - | - | - |
| Sound pressure Free-cooling OFF - SSF (3) | dB(A) | 49,1 | 49,5 | 49,8 | 50,6 | 51,0 | 51,5 | - | - | - | - |
| Depth | mm | 3675 | 4590 | 4590 | 5490 | 6425 | 6425 | 6425 | 6425 | 7360 | 7360 |
| Width | mm | 2190 | 2190 | 2190 | 2190 | 2190 | 2190 | 2190 | 2190 | 2190 | 2190 |
| Height | mm | 2350 | 2350 | 2350 | 2350 | 2350 | 2350 | 2350 | 2350 | 2350 | 2350 |
| Installed weight | Kg | 2623 | 3306 | 3814 | 4648 | 5003 | 5273 | 5385 | 6089 | 6133 | 6154 |

Data declared according to UNI EN 14511:2011.

(1) Evaporator water inlet/outlet temperature 15-10 °C, external air temperature 35 °C, glycol water at 30%.

(2) Evaporator water inlet/outlet temperature 12-7 °C, external air temperature 35 °C, glycol water at 30%.

(*) In total Free-cooling mode the absorbed power is only the fans absorbed power.

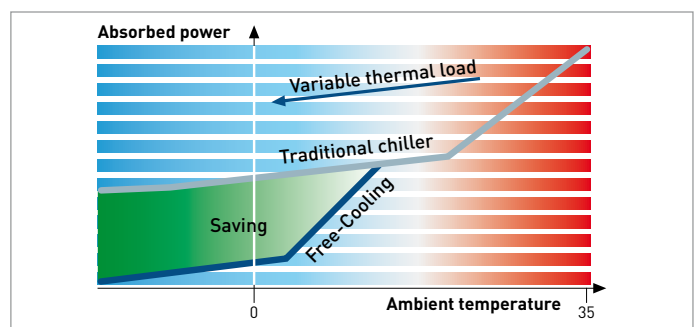
(3) **Sound pressure at 10 m:** average value obtained in free field on a reflective surface at a distance of 10 m from the side of the condenser coils and at a height of 1.6 m from the unit support base. Values with tolerance +/- 2 dB. The sound levels refer to operation of the unit under full load in nominal conditions. The sound pressure level is referred at functioning with Free-cooling Off.

The listed noise levels, weights and dimensions refer to base chillers with no options fitted.

Availability of Free-Cooling

| | Annual FC % usability on daily time from 6 AM till 8 PM | |
|------------|---|---|
| | % of freecooling with water inlet = 12 °C | % of freecooling with water inlet = 15 °C |
| Berlin | 54% | 68% |
| Brussels | 51% | 69% |
| Copenhagen | 61% | 74% |
| Milan | 47% | 54% |
| Oslo | 75% | 84% |
| Stockholm | 63% | 73% |
| Vienna | 50% | 60% |

Energy saving



Semi-graphic backlit PGD terminal.



Sections featuring complete aeraulic segregation to maximise the use of free-cooling.



Servo-controlled three-way hydraulic valve.

