

# PHOENIX FREECOOLING

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 silencing canopy on C version (standard on other version);
- Correction capacitor;
- Axial fans with continuous regulation;
- Fused or MCB electrical protection;
- Air filters on coils;
- -15 °C ambient temperature version;
- Spring type antivibration dampers;
- Replicated remote user terminal;
- Remote display.

## 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.

## VERSIONS

- Chiller with freecooling system;
- Acoustic configurations:
  - C standard;
  - SC low noise;
  - SF low noise high ambient temperature;
  - SSF very low noise.

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
	Total 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
	Total 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	
IPLV	-	3,50	3,78	3,66	3,66	4,05	3,61	3,80	3,83	3,78	3,64	
Power supply	V/Ph/Hz	400±10%/3/50										
Circuit / Compressors	N°	1/1 1/1 1/1 1/1 1/1 2/2 2/2 2/2 2/2 2/2										
Freecooling noise level OFF vers. C	dB(A)	62,0	63,2	62,6	63,6	65,0	65,5	65,6	65,7	66,9	66,9	
Freecooling noise level OFF vers. SC	dB(A)	55,4	56,3	56,0	57,0	59,0	59,1	59,3	59,4	60,5	60,6	
Freecooling noise level OFF vers. SF	dB(A)	55,7	56,1	56,3	57,2	59,1	59,2	-	-	-	-	
Freecooling noise level OFF vers. SSF	dB(A)	49,1	49,5	49,8	50,6	51,0	51,5	-	-	-	-	
Depth	mm	2190	2190	2190	2190	2190	2190	2190	2190	2190	2190	
Width	mm	3675	4590	4590	5490	6425	6425	6425	6425	7360	7360	
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	

All data refers to standard units at the following nominal conditions:

(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 al 30%.

\* In total Freecooling mode the absorbed power is only the fans absorbed power.

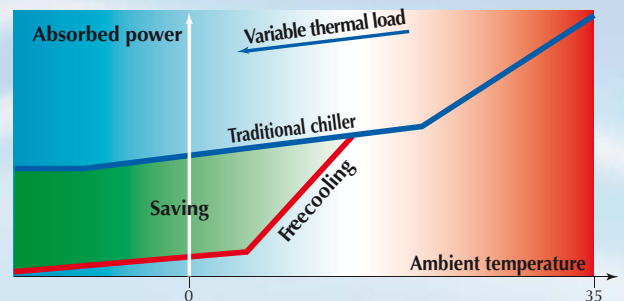
Sound pressure level in hemispherical field at 10 m from condenser side and 1.6 m from ground. Values with tolerance ± 2 dB.

The sound levels refer to operation of the unit under full load in nominal conditions.

## 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.

