

# PHOENIX *plus* R134a

Air-cooled chillers with R134a equipped semi-hermetic twin screw compressors. Cooling capacity 454 - 1718 kW.

CLASS A ENERGY EFFICIENCY ON MOST MODELS, REFRIGERANT R134A, UP TO 4 SCREW COMPRESSORS, LOWEST NOISE LEVELS, ENDLESS ACCESSORIES, GENEROUS OPERATING LIMITS: TOGETHER THESE MAKE PHOENIX PLUS AN UNMATCHED INDUSTRIAL CHILLER PACKAGE.



## PERFECT TEMPERATURE CONTROL

The compressor cooling capacity is continuously controlled by an actuator driven partialisation device; this ensures perfect cooling capacity control and, consequently, extremely precise water temperature control, a fundamental requirement in industrial applications

## HIGH EFFICIENCY EVAPORATORS

The direct expansion shell-and-tube evaporators, optimised for R134a, are among the most technologically advanced on the market. Thanks to their construction, and the facility for periodic maintenance, they provide stable and reliable operation in even the harshest industrial applications. All evaporators are protected from freezing by means of the microprocessor's antifreeze function and a differential pressure switch.

## R134A ENVIRONMENTALLY FRIENDLY REFRIGERANT

Phoenix<sup>plus</sup> features R134a, a chlorine-free, zero ozone depletion potential (ODP) refrigerant with significant environmental benefits. R134a's reduced operating pressures and temperatures ensure high compression levels with reduced electrical power consumptions.

## ADVANCED MICROPROCESSOR

The powerful 32-byte programmable microprocessor allows energy efficiency levels to be maximized in all load conditions. The microprocessor features STATUS CONTROL design, presenting the user with a full range of information concerning the status of the various controlled parameters. Remote interfaceability is assured by means of a GSM modem and full compatibility with the most widely used Building Management System (BMS) communication protocols: BACnet, Lonworks, and ModBus.

## CLASS A ENERGY EFFICIENCY

As the cost of electricity rises so energy efficiency is becoming an increasingly critical factor for the operating overheads of an industrial system. That's why Phoenix<sup>plus</sup> is designed to offer unmatched energy efficiency levels. This has been achieved thanks to meticulous design and components selection including, for example, continuous compressor capacity control and the availability of up to 4 compressors within independent circuits. The majority of HE models offer Class A energy efficiency in compliance with EECAC norms, which translates to EER values superior to 3.1.

## QUIET AND POWERFUL

SN and SSN versions feature compressors housed in acoustically insulated metal compartments clad with sound absorbing material, combined with reduced fan speeds, anti-vibration dampers and mufflers. This results in the lowest sound emission levels on the market.

## VERSIONS

- N - standard;
- SN - low noise;
- SSN - super-silent (for high ambient temperatures);
- HE - high energy efficiency version.
- Low ambient temperature version (-20 °C).

## ACCESSORIES

- Electronic fan speed regulation;
- Electronic thermostatic valve;
- Pre-coated condensing coils for aggressive atmospheres;
- Compressor protection by means of automatic cut-outs;
- Antivibration dampers kit;
- Replicated remote user terminal kit;
- Supervisor kits;
- Metal mesh protection filters for condensing coils;
- Evaporator antifreeze heater.

Model PHOENIX <sup>plus</sup>		160	170	180	190	200	220	250	265	280	310	330	360	390	405	420	440	470	500	530	560
Cooling capacity (1)	kW	454	480	505	551	588	667	736	791	846	937	1002	1077	1159	1214	1292	1369	1414	1468	1607	1718
Absorbed power (1)	kW	112	121	130	128	140	150	179	187	195	211	225	255	277	285	297	305	331	358	379	395
Max external air temperature (1)	°C	38	38	38	39	39	41	38	38	38	41	41	38	38	38	39	40	38	38	38	39
Cooling capacity (2)	kW	322	342	362	394	423	480	526	568	611	673	721	771	831	873	934	987	1014	1048	1155	1241
Absorbed power (2)	kW	114	123	131	134	145	159	180	191	202	221	239	260	280	291	306	322	340	358	385	407
Max external air temperature (2)	°C	44	44	44	44	44	46	44	44	44	46	46	44	44	44	44	45	44	44	44	44
ESEER	-	3,58	3,72	3,78	3,80	3,85	3,92	3,62	3,95	4,06	3,95	3,95	3,84	3,93	4,01	4,17	4,06	3,87	3,66	4,01	4,17
I.P.L.V.	-	3,79	3,94	4,00	4,02	4,08	4,13	3,83	4,18	4,28	4,12	4,13	3,98	4,09	4,18	4,34	4,22	4,00	3,77	4,15	4,31
Power supply	V/Ph/Hz	400±10%/3/50																			
Noise level	dB(A)	68,9	68,9	68,9	70,1	70,1	71,0	71,1	71,0	70,9	72,4	72,7	72,8	72,8	72,7	72,6	74,0	74,1	74,1	74,0	73,9
Depth	mm	2190	2190	2190	2190	2190	2190	2190	2190	2190	2190	2190	2190	2190	2190	2190	2190	2190	2190	2190	2190
Width	mm	4530	4530	4530	4530	4530	4530	4530	4530	4530	6510	6510	6510	6510	6510	6510	8490	8490	8490	8490	8490
Height	mm	2360	2360	2360	2360	2360	2360	2360	2360	2360	2360	2360	2360	2360	2360	2360	2360	2360	2360	2360	2360
Installed weight	Kg	3467	3509	3554	4137	4288	4702	4866	4949	5033	6511	6907	7286	7391	7472	7627	9085	9306	9349	9833	10000

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

- (1) Evaporator water inlet-outlet 20-15 °C, external air temperature 25 °C;
- (2) Evaporator water inlet-outlet 12-7 °C, external air temperature 35 °C;

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.

## OPTIMISED SCREW COMPRESSORS

Phoenix<sup>plus</sup> semi-hermetic twin screw compressors have been developed and optimised specifically for R134a and are equipped, as standard, with a continuous capacity control facility and part winding starter device. The high level of reliability these compressors offer is assured by the reduced number of moving parts and the direct coupling of the drive screw to the motor in a solution that ensures near continuous refrigerant delivery, thereby reducing the level of vibration. The reduction of the resistive torque and compression ratio associated with the use of R134a result in reduced wear of the mechanical elements and lower electrical power consumptions.

## HIGH RELIABILITY IN THE MOST EXTREME CONDITIONS

Phoenix<sup>plus</sup> units are designed to ensure reliable operation in the typically demanding conditions of industrial applications thanks to the availability of up to 4 independent refrigerant circuits and generously sized condensing coils. N models guarantee full load operation up to ambient temperatures at 44 °C, whilst the high efficiency HE version can handle temperatures up to 49 °C without the compressor capacity control devices cutting in. Phoenix<sup>plus</sup> can operate at even higher temperatures in conjunction with cooling capacity management.

Backlit semi-graphic user terminal



Electronic thermostatic valves (optional)



Unimpeded access to the compressors



Optimised fans for whisper-quiet operation (SSN version)

