

P
10/932

Precision Air Conditioners:

X air or water-condensed direct expansion
W chilled water
Cooling capacity 7÷187kW



- **STRICT CONTROL OF ROOM TEMPERATURE AND HUMIDITY.**
- **A HIGH RATIO OF COOLING POWER AND FOOTPRINT, WHICH FACILITATES THE DESIGN OF THE ROOMS TO BE AIR-CONDITIONED.**
- **HIGH ENERGY EFFICIENCY VALUES, RESULTING IN LOWER CO2 EMISSIONS IN THE ENVIRONMENT AND IN PARTICULARLY LOW OPERATING COSTS.**

FEATURES

P series precision air conditioning units have design and operational features suitable for rooms where sensible nature heat loads are prevailing.

CONFIGURATIONS

PXO: upwards flow air conditioners with direct expansion with air or water condensation.

PWO: upwards flow air conditioners with chilled water.

PXU: downwards flow air conditioners with direct expansion with air or water condensation.

PWU: downwards airflow air conditioners with chilled water.

FEATURES

The **P** series precision air conditioning units are designed for precision air conditioning of technological rooms characterized by elevated thermal loads to be eliminated, such as computing centres and other applications where high performances and maximum reliability are required.

Precision Air Conditioning units can be customized as per necessities, in order to offer a complete control of temperature, of humidity and of air quality through accessories such as humidifier, after-heating and high efficiency filters.

In order to guarantee the maximum reliability and flexibility, there are available both solutions with double circuit and solution with different cooling mediums:

• **TWO SOURCES:** The Twin Sources system ensures cooling continuity in case of unavailability, for whatever reason, of the primary source: overhead, maintenance, night or seasonal stop or stop for any emergency. This system includes the assembly inside the air conditioner of a second cooling source, complete with its regulation and completely independent from the

primary one. They only share the aluminium finned pack, allowing both a high thermal exchange efficiency.

• **FREE COOLING:** This system employs external air, a renewable energy source, for cooling the Free Cooling water circuit by an external dry cooler. The Free Cooling circuit works in place of, or along, the mechanical cooling with direct expansion.

These coolers are designed and optimized for working with refrigerant R410A, which is not dangerous for the ozone.

STRUCTURE

The structure consists of a steel frame painted with dark grey epoxy powders (RAL7024) guaranteeing a durable finish. Acoustic insulation self-extinguishing panels covered with anti-friction film.

COILS

Large surface batteries, positioned in such a way as to optimise airflow and heat transfer, made of refrigerating quality copper tubes with aluminium louvers mechanically merged, fitted with motorised 3way valve (2way is also available in the selection process).

COMPRESSORS

High efficiency scroll compressor with low power consumption. In dual circuit configuration you can control the power output thanks to electronic adjustment that automatically manages the compressors activation depending on the load request.

FANS

Centrifugal fans with backward curved blades (plug fans) with EC motor directly coupled to the electronic control to minimize power consumption and noise emissions.

FILTERS

Corrugated baffle filters, not regenerable, self-

extinguishing, G4 efficiency class (according to EN 779). Differential pressure switch (STANDARD) for dirty filter alarm.

ELECTRONIC REGULATION

Thanks to the control via Modbus® Master protocol all major components of the units have a continuous supervision, with over 50 different variables that provide real-time monitoring of all operating cycles. Thanks to specific functions dedicated to energy saving and optimized management of all unit operating cycles, both with direct expansion and with chilled water. Thanks to the integrated RS485 Modbus® board, and to an interface gateway BACnet, LonWorks and SNMP, a simple and fast interface to supervision systems and BMS (Building Management System) is possible. View of all operating parameters in 8 languages.

ACCESSORIES

DIRECT EXPANSION

- DC brushless compressors with inverter control
- Electric power supply line for remote condenser
- Electric power supply line with speed adjustment for remote condenser
- Condenser adjustment with 0-10V signal for remote condenser with EC fans
- "LT Kit" for external air low temperature functioning with remote condenser
- Increased liquid receiver
- Non-return valves on the flow and liquid lines
- Water condenser
- Water condenser with valve for adjusting the condensation temperature
- "HT Kit" for functioning with high condensation temperatures

CHILLED WATER:

- Two ways modulating valves
- Inlet and outlet water temperature probes
- "Power Valve" Kit

HEATING:

- Low thermal inertia electric batteries with differentiated stages regulation
- Low thermal inertia electric batteries with modulating regulation (available on request on some models only)
- Water heating batteries with 2 or 3 ways modulating valve (available on request on some models only)

HUMIDIFICATION:

- Room humidity probe
- Flow humidity probe
- Immersed electrode humidifier

MECHANICALS AND STRUCTURAL:

- Condensation drain pump
- Condensation and humidifier drain pump
- Flow overpressure dampers
- M5 (EU5) efficiency air filter on air supply
- Soundproofed duct piece on flow
- Flow plenum with adjustable grills.
- Height adjustable support for raised floor installation
- Grilled panels for front flow
- Closed panels for downwards air intake
- Panels with "sandwich" counter-panels (available on request on some models only)
- Panels with increased soundproof upholstery (available on request on some models only)

ELECTRICAL:

- Alternative available voltages: 460V/3ph/60Hz - 380V/3ph/60Hz - 230V/3ph/60Hz
- Electric power supply line without neutral
- "Basic" version automatic transfer switch (ATS)
- "Advanced" version automatic transfer switch (ATS)

ADJUSTMENT:

- Constant flow rate ventilation adjustment
- Constant pressure ventilation adjustment

- Local area network configuration and cable
- User terminal for remote installation
- Flooding detection system

Note: For further information, refer to the selection program.

SMARTNET

The innovative **SMARTNET** system revolutionises the local area network concept.

This system, using the modulation capabilities of its components, allows dividing the workload across all units in the local area network.

Compared to Duty Stand-by latent redundancy system (n+1 or n+n) where backup units were still waiting for the emergence of a problem, the **SMARTNET system allows maintaining the units connected on the network always active.**

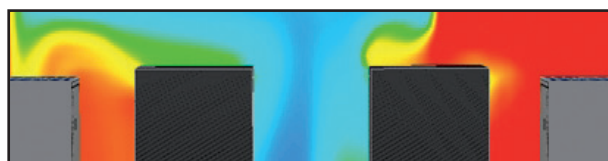
DUTY / STAND-BY



On 100%

On 100%

Stand-by



On 100%

Stand-by

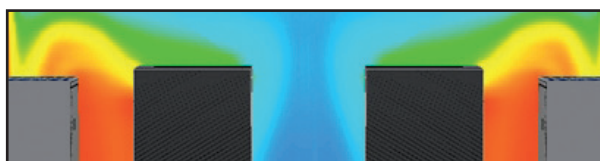
SMARTNET



On 66%

On 66%

On 66%



On 60%

On 60%

TECHNICAL DATA

PXO: upwards airflow - direct expansion with air or water condensation

Sizes		71	141	211	251	301	302	361	422	461	512	662	852	932
Total cooling capacity	(1) kW	7,8	14,9	21,3	26,8	33,6	30,9	37,8	43,7	48,1	54,2	67,3	90,1	93,3
Sensitive cooling capacity	(1) kW	7,6	13,4	21,3	25,6	31,7	30,6	37,8	43,7	47,9	52,8	64,8	77,0	85,0
EER	(2)	3,71	3,37	3,15	3,18	3,08	3,2	3,30	3,27	3,43	3,25	3,13	3,33	3,53
Centrifugal	type	Plug fan EC												
Air flow rate	m3/h	2200	3200	7000	7000	8700	8700	14500	14500	14500	14500	17900	17900	20700
Sound data														
Sound Pressure	(3) dB(A)	51	57	62	62	60	60	65	65	65	65	62	62	60
Possible configurations														
Free Cooling						•	•					•	•	
Two Sources				•		•	•					•	•	

PWO: upwards airflow - with chilled water

Sizes		10	20	30	50	80	110	160	220
Total cooling capacity	(1) kW	10,0	18,0	32,4	43,6	66,8	80,2	121,9	160,3
Sensitive cooling capacity	(1) kW	9,2	15,4	29,8	38,1	62,1	72,0	109,7	144,0
EER	(2)	34,42	28,52	22,83	21,48	23,95	24,29	23,62	24,29
Centrifugal	type	Plug fan EC							
Air flow rate	m3/h	2200	3200	7400	8200	15400	17000	26000	34000
Sound data									
Sound Pressure	(3) dB(A)	51	57	63	59	66	62	64	65
Possible configurations									
Free Cooling					•		•	•	
Two Sources					•		•	•	

PXU: downwards airflow - direct expansion with air or water condensation

Sizes		71	141	211	251	301	302	361	422	461	512	662	852	932
Total cooling capacity	(1) kW	7,7	14,5	20,8	25,3	31,2	30,6	36,6	42,7	46,9	51,6	67,7	87,3	94,2
Sensitive cooling capacity	(1) kW	7,4	12,8	20,8	22,7	30,3	30,1	36,6	42,7	45,3	47,4	64,5	73,2	85,4
EER	(2)	3,69	3,36	3,12	3,06	3,13	3,2	3,24	3,22	3,37	3,14	3,25	3,29	3,59
Centrifugal	type	Plug fan EC												
Air flow rate	m3/h	2200	3200	7000	7000	8700	8700	14500	14500	14500	14500	17900	17900	20700
Sound data														
Sound Pressure	(3) dB(A)	51	57	62	62	60	60	65	65	65	65	62	62	60
Possible configurations														
Free Cooling						•	•					•	•	
Two Sources				•		•	•					•	•	

PWU: downwards airflow - with chilled water

Sizes		10	20	30	50	80	110	160	220
Total cooling capacity	(1) kW	10,2	18,1	32,4	43,6	67,4	93,4	142,1	186,9
Sensitive cooling capacity	(1) kW	9,2	15,5	29,8	38,1	62,5	80,7	122,9	161,3
EER	(2)	34,42	29,24	22,83	21,48	24,16	24,02	23,33	24,02
Centrifugal	type	Plug fan EC							
Air flow rate	m3/h	2200	3200	7400	8200	15400	17000	26000	34000
Sound data									
Sound Pressure	(3) dB(A)	51	57	63	59	66	62	64	65
Possible configurations									
Free Cooling					•		•	•	
Two Sources					•		•	•	

■ **(1) Cooling:** condensation temperature 45°C; input air 24°C-45%; water 7/12°C; external static pressure: 30Pa.
Stated performances do not take into account the heat generated by the fans which must be added to the heat load of the system.

(2) EER: Energy Efficiency Ratio; total cooling capacity / input power to the compressors + the power of fans (excluding air condensers)

(3) Sound pressure: stated data 2m away, in free field according to UNI EN ISO 3744:2010

UPWARDS FLOW CONFIGURATIONS



Standard version with frontal air intake and upwards flow.



Version with front air intake and frontal air flow with distribution plenum with grid.

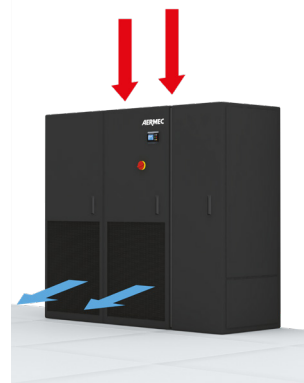
DOWNWARDS FLOW CONFIGURATIONS



Standard version with upwards suction and downwards airflow, with sub-base for raised flooring.



Version with upwards suction with frontal air flow with grilled plenum distribution.



Version with upwards suction with frontal air flow with grilled front panel.

DIMENSIONS

Dimensional data

Mod. PXO - PXU	71	141	211	251	301	302	361	422	461	512	662	852	932
Height	mm	1990	1990	1990	1990	1990	1990	1990	1990	1990	1990	1990	1990
Width	mm	750	750	860	860	1410	1410	1750	1750	1750	2300	2300	2640
Depth	mm	600	600	880	880	880	880	880	880	880	880	880	880
Weight	kg	180	210	270	270	320	340	440	450	500	640	660	860

Dimensional data

Mod. PWO - PWU	10	20	30	50	80	110	160	220
Height	mm	1990	1990	1990	1990	1990	1990	1990
Width	mm	750	750	860	860	1750	1750	2640
Depth	mm	600	600	880	880	880	880	880
Weight	kg	155	160	220	240	340	360	700