

7.



Series:

*AIR CONDITIONERS FOR LARGE DATA CENTERS:
IN-RROW INSTALLATION*

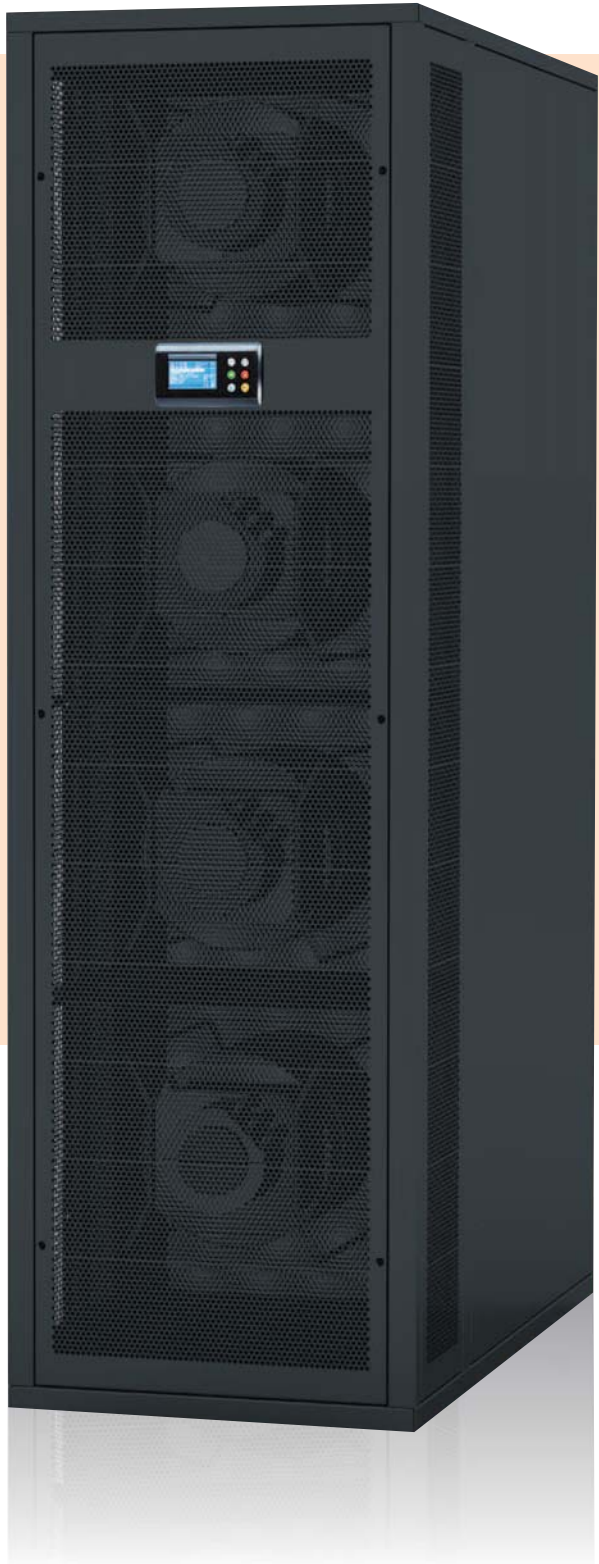
APPLICATIONS

The design of air conditioning plant for large data centres increasingly requires the adoption of the concepts listed below. Indeed, they have now become consolidated international standard practice:

- The racks containing the servers are more often positioned according to the “hot corridor” and “cold corridor” layout.
- The working air temperatures are now allowed to go up to 30-35°C in the hot corridor and 20-25°C in the cold one. Consequently, also the water temperature rises up to 20-28°C. In this way the free cooling function is exploited at its best.
- Server capacities keep going up while their dimensions keep going down. This means that more servers can be installed in a rack so that some of these racks, remaining empty, can be removed. At the same time the heat dissipated rises and more capacity is required from the air conditioners.
- The servers work day and night albeit with a night time reduction of their capacity. It is therefore essential for the air conditioning installation to have an efficient modulating cooling capacity control and to be designed for the maximum energy saving and minimum environmental impact.
- In order to satisfy these requirements, a family of air conditioners has been designed and constructed to have the same dimensions as the racks, with rear suction from the hot corridor and frontal discharge into the cold one; with the following advantages:
 1. Use of the space freed up in the racks and therefore cold air is distributed as close as possible to the server i.e. where the heat is generated.
 2. Horizontal air suction and also horizontal air discharge: the air flow therefore does not change direction inside the machine, so avoiding the relative pressure drops and with an important consequent reduction of the power draw.
- Cooling, hydraulic and electrical connections from above or from below.

Main characteristics

- Direct expansion from 20 to 40 kW
HRA: horizontal air discharge
- Chilled water from 15 to 40 kW
HRU: horizontal air discharge



7. **R Series:**

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HRA: direct expansion air conditioners for in-row installation

Models	231	361
Performance		
Tot. cooling cap. kW:	22,8	35,5
Sens cooling cap. kW:	22,8	31,3
Airflow m ³ /h:	7500	7500
EER	3,41	3,41
SPL:dB(A)	61	62
Dimensions & weight		
Lenght mm.	600	600
Depth mm.	1180	1180
Height mm.	2000	2000
Net weight kg.	215	215

HRU: air conditioners with chilled water coil for in-row installation

Models	40
Performance	
Tot. cooling cap. kW:	42,5
Sens cooling cap. kW:	39,4
Airflow m ³ /h:	10000
EER	21,30
SPL:dB(A)	67
Dimensions & weight	
Lenght mm.	600
Depth mm.	1180
Height mm.	2000
Net weight kg.	190

Notes:

The performances are referred to: refrigerant R410; condensing temperature: 45°C; inlet air: 24°C - 45% RH; for chilled water: 7/12°C. The SPL is referred to 2 m distance, 1,5 m height, free field and sound damped discharge mouth. Available static pressure: 30 Pa. EER = Electro Efficiency Ratio = Total cooling capacity / compressors power input + fans power input. The above performances don't consider the heat generated by the fans which must be added to the thermal load of the system.